

THE ACCEPTANCE-RESISTANCE CONTINUUM

A QUALITATIVE STUDY ABOUT TEACHER ACCEPTANCE AND
RESISTANCE TO EDUCATIONAL CHANGE IN THE CONTEXT OF AI

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Abstract:

The development of Artificial Intelligence has rocketed during the past years and the impact it has had in such a short period has been somewhat unprecedented in the modern era. As its part in society is not defined yet, the discussion of it is more relevant than ever. The educational system stands in front of one of the largest changes in recent time and since it has been affected extensively by the new technological advancement that AI constitutes, research in the field is necessary. When it comes to educational change teachers have a lot of power to resist change, problematising decision-making and implementation, which lays the foundation for this study, to gather insights on an important yet overlooked group, crucial for successful change. The purpose of the study is to understand and explore how teachers' perceptions and forces influence acceptance and resistance of educational change with regard to AI implementation. This is done with the aim of answering the research question: *"How can the acceptance-resistance dilemma among teachers regarding AI and the related need for change in the school system be better understood?"* A qualitative study has been conducted, interviewing 13 Swedish upper-secondary school teachers, using semi-structured interviews, and serves as the basis for the empirical observations and consequently the conclusion of the thesis. When concluding the thesis, three main findings were presented: (1) Acceptance and resistance of educational change are not two distinct opposites, instead, it is a continuum where the degree of acceptance and resistance faced is dependent on the opportunities (driving forces) and threats (restraining forces) perceived. (2) The opportunity and threat forces that affect the placement on the acceptance-resistance continuum are (a) Social Identity Discrepancies, (b) Knowledge Discrepancies and (3) Educational Change Discrepancies (3) Teachers are not resisting change due to a fear of the technology itself, instead, it rather seems that the fear is based on uncertainty, organisational distrust during change and exclusion of involvement in decision making. This study contributes to existing change management literature with a new understanding of what affects teacher acceptance in the context of technological change, specifically AI, providing decision-makers and practitioners valuable insights that can be used for change planning and research within the field.

Keywords:

AI, Teacher, Acceptance, Education, Change

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//Rasmus and Sebastian

Definitions

CONCEPT	DEFINITION
Artificial Intelligence	A system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation (Kaplan & Haenlein, 2019, p.17).
Perceived Ease of Use	The degree to which the user expects the target system to be free of effort (Fador, 2014, p.157).
Perceived Usefulness	The user's subjective probability that using a specific application system will increase his or her job performance within an organizational context (Fador, 2014, p.157).
Quasi-Stationary Equilibrium	A state of contemporary equilibrium maintained by opposite forces, subject to change when new forces and behaviours are formed (Burnes, 2013).

Abbreviations

ABBREVIATION	DEFINITION
AI	Artificial Intelligence
AIED	Artificial Intelligence in Education
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
TAM	Technology Acceptance Model
USS	Upper-Secondary School

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EXECUTIVE SUMMARY

The study provides insights into what affects teachers' perception regarding acceptance and resistance to change in Swedish upper-secondary schools, providing practical value and understanding to educational stakeholders and change management research. As the emergence of AI tools is multiplying at a never-before-seen rate, impacting students and teachers both positively and negatively, the need for guidance and understanding of how they can be optimally introduced into the educational system is crucial.

Furthermore, the study provides teachers and educational decision-makers with a better understanding of what affects teachers' acceptance and resistance to change and how acceptance can be increased. It has become clearer that perceived opportunities and threats affect the acceptance of change, highlighting the importance of clearly presenting opportunities for teachers while addressing potential threats. Additionally, by including teachers in the decision-making and implementation process, teachers will understand the change and implementation better, increasing acceptance while also keeping a sense of power and autonomy in their profession. The study also underlines that it is crucial for management to keep a good relationship and transparency with teachers as disregarding this will reduce trust and acceptance in decisions made. Ultimately, teachers need to be involved in the decision-making to trust change and also to be educated enough about the change subject to feel comfortable and confident to go through with change. This can be done by providing seminars, workshops and continuous discussions by staff about AI to align goals and beliefs while also providing teachers with enhanced understanding and literacy to see the perceived usefulness and ease of use of the technology.

Furthermore, the study provides management researchers with a better understanding of what affects teachers' acceptance in the context of technological change education, having the ability to assist them in their further research on teacher acceptance of change or how technological change affects teachers. The study sets a foundation for further research potentially examining different forces' magnitude of effect or how implementation should be planned for optimal execution etc.

Nonetheless, it is important to recognise that AI needs to be integrated with caution as it is still a new tool within education. Detailed research on how over-reliance on AI can affect students and how implementation will impact the teacher's role is needed. While AI could reduce educational inequalities by providing equal access to AI-enhanced educational tools, concerns regarding biases, privacy and data security need to be addressed before optimal implementation can happen.

1. Introduction

1.1 Background

“With new technology come utopian reformers and dystopian cynics” (Schiff, 2020, p.332). In the face of an ever-evolving social landscape, the education system is working towards adapting and staying up to speed while ensuring that the quality of education is not compromised. A task more difficult than it seems at face value since *“stakes are believed to be nothing short of the future of society”* (Schiff, 2020, p.332). Education is the premier tool for improving the world, with technological advancements introducing numerous opportunities and challenges for educational systems globally (Ilori & Ajagunna, 2020)

Artificial Intelligence (AI) has been growing at an exponential rate and the mainstream takeover has blurred the meaning of AI, but is commonly defined as “a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Kaplan & Haenlein, 2019, p.17). AI in education can be traced back to the 1970s when researchers were trying to observe how computers might be able to substitute one-on-one tutoring (Bloom, 1984). The integration of AI has been a transformative force, reshaping industries with innovative solutions and improvements in efficiency at work. However, although AI has the potential to enhance the quality of life and improve efficiency, the rapid development of AI poses several risks as it is currently outpacing regulatory frameworks and policy debates, opening up the risk of unethical use and the overpowering of humans (UNESCO, 2021).

The increased use and exploitation of AI by students in education has required the educational decision-makers to take action and evaluate its options but despite the promise to revolutionise education, AI implementation is still a subject involving mixed emotions and opinions. Even though many teachers and researchers believe that AI can help create a more engaging learning environment, increase psychological safety, etc. (Bartneck et al., 2021), concerns about the integration of AI still remain. Critics point to data privacy issues, the digital divide, and the risk of losing human elements in education.

Moreover, the integration of AI into education is not solely a technical challenge but also a pedagogical one, potentially requiring a re-examination of curriculum, teaching methods, and assessment practices where the teachers play a crucial role in the adoption of new technology. Ultimately, the success of AI implementation largely comes down to teachers' perception and acceptance of AI in the classroom.

1.2 Aim and Expected Contribution

Since AI will play a critical role in shaping the future and teachers play a crucial role in implementing educational change, this study aims to understand how teachers' perceptions affect acceptance and resistance of AI implementation in upper-secondary schools (USS) in Sweden. Even though the AI revolution is widely regarded as one of the changes that will affect society and education the most, understanding teachers' perceptions and effects on organisational change in this context remains underdeveloped (Hejres 2022; Tyson & Sauers 2021). The objective of the paper will ultimately be to contribute to change management literature by examining how acceptance and resistance to organisational change can be understood from teachers' perspectives since their role in implementation is critical for successful change (Luckin et al., 2016).

1.3 Research Question

Motivated by the reasoning above, the Research Question is:

"How can the acceptance-resistance dilemma among teachers regarding AI and the related need for change in the school system be better understood?"

1.4 Delimitations

The study focuses on upper-secondary school teachers in Sweden motivated by the fact that Swedish development is of importance for the authors and because the perception of AI implementation and change varies greatly between countries (Gillespie et al., 2023), making it difficult to arrive valuable and reliable conclusions when assessing multiple countries concurrently, supporting the importance of national delimitation. The choice to focus on USS is motivated by the fact that this is where the authors believe the use of AI is most prevalent for students and where impact is most critical.

2. Literature Review

This section will include (1), a thorough review of relevant literature aimed to help answer the Research Question and (2), an identified Research Gap to conclude the section.

2.1 Educational Change

2.1.1 Organisational Change

Organisations are changing much faster (Peters, 1999), and effective change management to support individuals is crucial. Change management is built upon integrated theories and practices from various social sciences making the field a complex interwoven environment (Burnes, 2004). The field is generally built upon three different schools of thought focusing on different aspects of organisational life where the group dynamics school is most relevant in this study.

The Group Dynamics School emphasises achieving change via groups instead of individuals (Burnes, 2004). Since people work in organisations as groups, individual behaviour must be seen, modified or changed in the light of groups' prevailing practices and norms. Behaviour is influenced by the group environment or "field," generating forces and tensions from group pressures. A person's behaviour at any time, results from the interactions between these forces. Therefore, a group is never in a steady state; instead, constantly in a process of adaptation termed "quasi-stationary equilibrium" meaning that rhythms and patterns of behaviour make the equilibrium fluctuate (Burnes, 2013).

2.1.2 Previous Change in Education

Several educational changes have taken place in the past decades in Sweden, many caused by the deregulation of the Swedish school system (Krantz & Fritzén, 2021). Concurrently, schools have been facing problems regarding knowledge, skill and legitimacy, spiking the interest in change (Carlgren & Marton, 2000; Nilsson-Lindström & Beach, 2013). Education has changed from rule-based to goal and result-oriented, increasing bureaucratisation (OECD, 2015). This change was characterised by demand for efficiency, comparability, transparency, and increased documentation (Evetts, 2009), something teachers resisted as they lost motivation since they disliked the control and measurement systems. The resistance and non-improvement of regulations and bad international academic records made the union and education system decrease the number of regulations and tried increasing autonomy for teachers to remove tasks that did not improve results or learning (Krantz & Fritzén, 2021).

Additionally, schools shifted towards subject- and evaluation orientation where teacher specialisation became the focal point to improve efficiency. However, this led to increased administrative workload, reducing autonomy and infringing on the educators' professionalism and status. When mundane and boring tasks became central features they resisted the change since their work became meaningless, consequently impacting quality. During the past decades, the importance of teachers' role in creating a safe space for their students has increased which has put a larger emphasis on teachers' emotional engagement and being a role model for the students (Krantz & Fritzén, 2021).

One prominent issue teachers had was the externalisation of decision-making and power. Krantz and Fritzén (2021) explain that when the system changed to result-orientation, the union believed teachers would get more responsibility and power but instead, the power was ultimately granted to municipal representatives, politicians etc. who started competing over who had the better educational solutions, undermined the teachers' position and power. This led to distrust and caution of whether things were done with alternative motives, ultimately causing resistance to change.

2.1.3 Teachers' Role in Educational Change

Efforts to change that do not consider school culture and teachers will ultimately fail (Sarason, 1990). The role of teachers in educational change is instrumental (Datnow, 2020), and the teacher's role in change has shifted from acting as change agents to now being recipients of top-down decision-making, lowering teacher autonomy and power.

Cohen and Lechner (2011) explain in their three-step model about teachers' role in educational change that in order for change to take place, an initiative must come from either teachers or administrators, where a change arising from an external factor or “higher up” is not deemed an initiative.

Furthermore, it is deemed that when teachers are allowed to partake in the implementation of change, they are able to cope with the implications, thus dealing with issues and developing tools more efficiently to tackle the problems faced (Shamir-Inbal et al, 2011). In accordance with the statements of Datnow (2020) and Shamir-Inbal (2011), a common understanding of the teaching role is a loss of professionalism. The loss of professionalism has contributed to lost autonomy but also by the loss of influence over teaching methods combined with an overall increase of workload, (Frostenson, 2015).

Overall, according to the literature, teachers affect both the rate and potential of educational change whereas inclusion and ease of change affect acceptance. Knight (2009, p.511) states in his article, *“If the practices are powerful and easy, most teachers will implement them. If the practices aren't powerful or easy, there is very little anyone can say to persuade teachers to change.”*

2.1.4 Current Use of AI in Education

AI has gone from being an academic research tool to being pivotal in everyday business (Popenici & Kerr, 2017). AI has been applied in many areas including education (Luckin et al., 2016), with artificial intelligence in education (AIED) becoming a thoroughly researched subject due to its streamlining powers (Chassignol et al. 2018; Shute & Psotka 1996). Several AIED-driven applications to track student behaviour and develop tutors for students are tried (Luckin et al., 2016). These intelligent tutoring systems are designed to provide students with the personal knowledge to advance development while catering to student needs (Graesser et al. 2012; Nwana 1990). In modern-day this is done through machine learning, making it difficult to justify decisions and explain rationale since decisions cannot be explained by AI leaving individuals with uncertainty and fear of using (Luckin et al., 2016). Teachers will be crucial for implementation and Luckin et al. (2016) highlight the importance of involving teachers in designing and shaping the AIED environment to ensure that teachers' needs are supported while also gaining digital literacy and a greater understanding of how AIED can be utilised. The technology will also help transform the teacher's role by taking on certain tasks such as record keeping. She argues that this will allow more freedom and devotion of time to the creative and human acts of teaching.

However, concerns remain about the risk of declining trust in AI and a reduction of support and funds invested (Kaplan & Haenlein, 2019). To avoid a decline, Chellappa (2022) argues that it is crucial to address the most concerning challenges for individuals such as lost authority, uncertainty and privacy concerns. Furthermore, criticism is also pointed towards AI's role in personal learning, saying that meaningful and truly personal learning never requires technology and if it does we should be sceptical about who really benefits. Criticism is also directed to the fact that AI replacing teachers can negatively affect student interaction and affect their understanding of social mechanisms since all students have different learning curves that teachers adapt to (VanLehn, 2011).

Currently, certain educational institutions are trying to implement interactive learning environments to help students learn (Chassignol et al., 2018). Additionally, there are many more AIED applications being tested (Zawacki-Richter et al., 2019), where AI systems already can assess assignments (Zhu et al., 2020), analyse and provide feedback to students (Mirzaeian et al., 2016) and measure the optimal way people learn amongst other things (Cutumisu et al., 2019). Nonetheless, Kabudi et al. (2021) underscores that a majority of the current tools are still being developed and have yet to be implemented on a larger scale, highlighting that there is a discrepancy between the potential of AI and the current use which comes down to lacking understanding and trust of new technologies.

2.2 Acceptance Versus Resistance

2.2.1 Teachers Acceptance and Resistance to Change

Resistance and acceptance relating to educational change are said to be affected by a number of factors. Bearing this in mind, resistance to change can be found when teachers feel that their situation is worsened or not positively affected by the change, likewise, if the change is perceived as difficult to implement (Portela, 2022).

From the literature it is found that schools often adopt innovations for change that lead to resistance due to previous changes that have increased bureaucratisation (Ball, 2017), meaning less time for teaching, and a greater perception of being marginalised thus driving resistance.

In contrast to this, it is concluded that acceptance of change is related to the inclusion of teachers in the building and formation of new ways of working (Luckin et al 2016). The acceptance of changes and subsequently the implementation of them are also affected by the relationship with decision-makers, where an increase in relational success benefits the acceptance. Additionally, acceptance increases when uncertainty decreases, followed by the inclusion of teachers in the decision process depending on perceived competence and knowledge (Graham, 2002).

Acceptance and resistance are deemed changes transitionally throughout implementation where resistance decreases as implementation comes further. (Portela, 2022). In accordance with the literature above, Gordon et al. (2009) and Luckin et al. (2016), describe teachers as the most important agents of change in the educational setting, with the aforementioned factors creating the base for what is possible with regard to change.

2.2.2 Knowledge Effect on Organisational Change

Literature indicates that knowledge influences organisational change in a transformative way. and serves as a driver and an enabler for change, impacting the extent and course of changes in classrooms (Markova, 2006).

Organisations, including schools, can undergo proactive or reactive change. While proactive changes are intentional, frequently strategic, and aimed at predicting optimal change, reactive changes are made due to unforeseen changes and trends, forcing institutions to adapt in order to survive (Burnes, 2004c). The emergence of AI is an example of a factor causing a need for reactive change in order to cope with implications where idleness can affect educational operations negatively.

The ability to apply and maintain change in schools is directly impacted by the efficient use of information. Staff members' sharing and integrating of implicit and explicit knowledge is usually necessary for incremental changes, including curricular modifications or pedagogical advancements (Pöyhönen, 2004).

2.3 Research Gap

There is considerable research being done on AI and how it will affect the education system and also how teachers' acceptance or resistance affects change (Sellars 2012; Zhai et al. 2021). However, there is very limited research done on these topics in combination with each other. Furthermore, little effort has been made how specifically technological change affects acceptance and resistance. Thus, the argument for further research being needed is to examine how teachers in Swedish USS influence the implementation of new technological changes since there is currently no literature that explores the teachers' power to resist the change and what forces affect this (*Figure 1*).

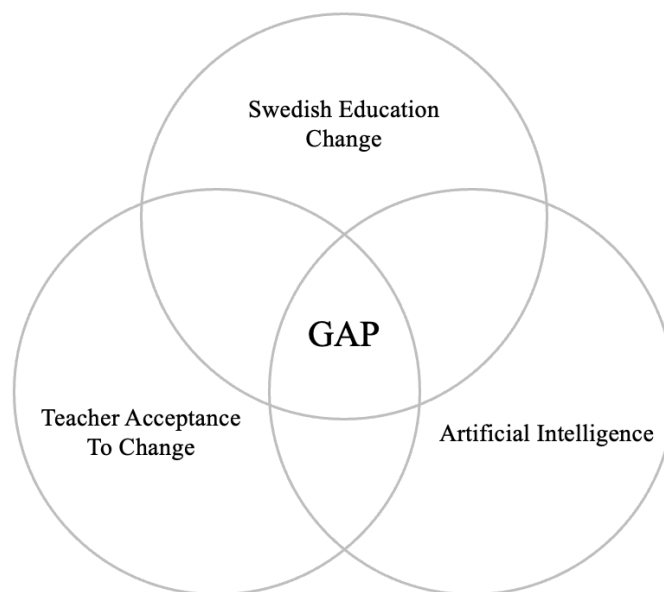


Figure 1: Research Gap Identified

3. Theoretical Frameworks

The theoretical concepts used are (1) *Forces Field Analysis* combined with a *Three-Step Model* inspired by Kurt Lewin (1947, 1951) but adapted by Burnes (2013; 2019), used as the main reference and (2) *Davis' Technology Acceptance Model (TAM)*, (1989). These concepts are used based on the literature and empirics highlighting the importance of acceptance and behavioural change when conducting change, where the acceptance of technology will be of special importance.

3.1 Force Field Analysis and Three-Step Model

Lewin argues that behaviour arises from a complex arrangement of simultaneous, interrelated forces that affect an individual or group and make up the “life space” where behaviour takes place (Burnes, 2019). Lewin challenges the traditional view that humans are the sum of their parts and that behaviour is caused by individual external stimuli and instead believes that behaviour is not only a product of external stimuli, it arises from how individuals perceive these stimuli (French & Bell, 1990; Kadar & Shaw 2000; Martin, 2003). Thus, one could not understand how an individual senses the environment without paying attention to their perception holistically. Every perception alone only has a meaning when put in relation to other perceptions.

Lewin's theories are old and criticised for being simplistic and underdeveloped (Burnes 2013; 2019; Gold 1992; Martin 2003). However, researchers have re-evaluated the theories and determined that a lot of the criticism is due to a fundamental misunderstanding of the theories and the underlying complexity of the theories, implying that the theories are indeed fully developed (Burnes 2013; Cronshaw & McCullough 2008). The age and criticism towards the theories have made the authors proceed by taking inspiration from Burnes' reevaluated versions of the force field analysis and the three-step model where Lewin is the underlying foundation, but, importantly not the focal point of the framework.

3.1.1 Force Field Analysis

The force field analysis looks at behaviour not as a static custom but instead as a dynamic balance between forces. It distinguishes between forces for change (*driving forces*) and forces against change (*restraining forces*) where acceptance is determined based on the extent to which individuals see driving versus restraining forces (Burnes, 2013). The present situation - *the status quo* - is being maintained by certain forces. This status quo in the field is in a continuous state of adaptation i.e. quasi-stationary equilibrium, meaning that rhythms and patterns of behaviour make the equilibrium constantly fluctuate (Burnes, 2013). This implies that change leaders must analyse change potential

and try to change the balance of forces to achieve change. This leads to there being three ways of achieving a movement: increasing driving forces, reducing resisting forces or considering new driving forces (Lunenburg, 2010). Force Field Analysis is a good tool to understand why there is resistance to change. If one could identify, map, and determine the strength of these forces, it would be possible to understand the behaviours of individuals, groups, and organisations and identify which forces should be reduced or enhanced (Burnes, 2013).

3.1.2 Three-Step Model

One can address issues regarding resistance to change by looking at a three-step model of change. To achieve successful change there is a need to disrupt current norms and behaviours to rebuild new behaviours (Burnes, 2019). Cummings et al. (2015) describe how several well-known theories are founded on the same principles as Lewin's for instance Kotter's 8-step model and Schein's Lewinian model, indicating that a three-step approach can be generalised. The three steps needed change are (Figure 2):

- 1) *Unfreeze or unlock the existing level of behaviour*
- 2) *Move to a new level*
- 3) *Refreeze behaviour at this new level*

(Burnes, 2019)



Figure 2: Three-Step Model (Burnes, 2019) edited by Wessberg & Ståhl, 2024

Stability in human behaviour is seen as a quasi-stationary equilibrium difficult to change since this means changing a person's inherent behaviour. Thus, unfreezing is a process of re-educating people to “alter, replace, or transcend patterns of thinking, valuation, volition, or overt behaviour” (Benne, 1976, p.30). Unfreezing allows the fluidity necessary for change where education acts as an enabler.

The second phase involves modifying the balance between driving and restraining forces (Hayes, 2014), and is achieved by adjustments in attitudes and beliefs as well as in structures that shape behaviour.

Finally, freezing seeks to stabilise behaviour at a new quasi-stationary level, unfeasible if norms and routines are not simultaneously transformed.

Ultimately, the model describes that to achieve change, there is a need to change individuals' behaviours by re-educating, modifying and stabilising their behaviour, or else resistance will occur. The key is therefore to change individuals' behaviours.

3.2 Davis' Technology Acceptance Model

The *Technology Acceptance Model* (TAM) is an information system theory developed by Davis (1989) to make predictions and investigate factors affecting user's acceptance of technology (Fador, 2014) (Figure 3). TAM suggests that *perceived ease of use* (PEOU) and *perceived usefulness* (PU) of technology are predictors of user attitudes toward adopting technology, affecting actual usage. Additionally, PEOU is deemed to impact the PU of the technology since when users find a technology “easy to use”, they perceive the technology as a “useful one” (Davis, 1989). Ultimately, an individual's attitude towards a system is key to whether or not the person will use the system. External variables and design features are not believed to directly affect the attitude towards a system in this original model, instead, it only affects the attitude indirectly through PU and PEOU (Davis, 1989).

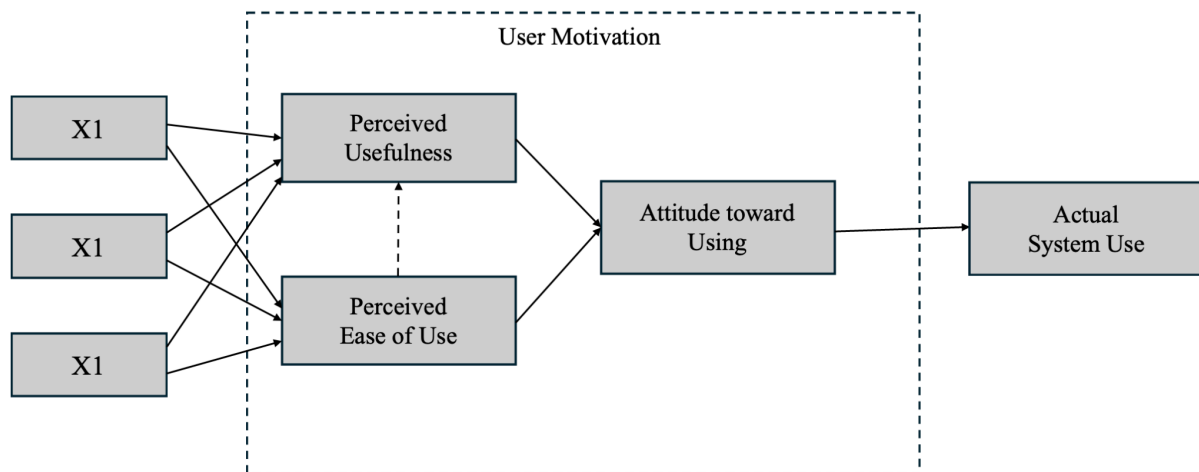


Figure 3: Original Technology Acceptance Model (Davis, 1989), edited by Wessberg & Ståhl, 2024

3.3 Theory Discussion

In summary, change efforts are dependent on an individual's acceptance of change which is based on a person's driving and restraining forces. Consequently, to achieve change, the most important requirement is to change the behaviour of the individuals facing change by unfreezing behaviour and norms suggesting that changing behaviour and perceptions are crucial to achieve desired change.

TAM posits that PEOU and PU are key predictors of a user's attitude toward adopting and using technology, which in turn impacts actual usage. The model highlights that in order to increase acceptance and use of a specific technology it is essential to increase individuals PEOU and PU.

In this study, force field analysis and the three-step model will be used to simplify and examine the forces and dynamics influencing teachers' acceptance and resistance to change. Additionally, TAM will be utilised to enhance the understanding of the technological factors that drive acceptance. Combining these theories will provide a solid framework for analysing the need for behavioural change to achieve acceptance of change where TAM ensures a more nuanced understanding in the context of technological change in education.

3.4 Theory Criticism

As previously mentioned, Lewin's theories have received criticism for being too simplistic and lacking underlying theoretical support. Some believe that those who promote force field analysis have fundamentally misunderstood Lewin's work (Cronshaw & McCulloch, 2008). Force field analysis is put forward as a technique to understand different forces without any consideration for the other elements of planned change (Burnes & Cooke, 2012) which leads to many people overlooking complex psychological conditions, only giving a partial understanding of a situation (Swanson & Creed, 2013). However, further research has deemed Lewin's original theory i.e. without mathematics to be viable (Brager & Holloway, 1993). As mentioned previously, Burnes (2013; 2019) has reevaluated the theories and deemed them relevant, consistent and rigorous, and will thus be used as a reference point to the force field analysis and three-step model.

TAM is inherently a quantitative model to estimate a user's acceptance (Davis, 1989). However, the model will be used from a simplistic and explanatory perspective, aiming at trying to understand how PEOU and PU influence the acceptance of technological change on an overall level rather than quantifying the effect. TAM has evolved over the years, providing a few versions of the model where for instance Bagozzi and Warshaw (1996) proposed to include a new variable in TAM called "behavioural intention", later on replacing "attitude towards usage (Venkatesh & Davis, 1996). However, this study utilises the model to understand acceptance and resistance on an overall level, the original version suffices. Furthermore, studies also show that nearly half of the studies conducted within the area used the old TAM version, with the potential of adding a new external variable (Granić & Marangunić, 2019).

4. Methodology

4.1 Research Approach

An interpretive paradigm perspective has been used, adopting a social constructionist ontological view of reality since reality is believed to be shaped through interactions and different perceptions. This perspective underscores the belief that understanding and sense-making of reality is an ever-evolving process (Saunders et al., 2019). By taking this perspective, the goal is to analyse and comprehend the reasons behind teachers forming their opinions and perceptions, to understand the change dilemma.

An abductive approach has been chosen where theoretical understanding and empirical data have been collected and revised in parallel. This method has been used for its flexible nature, allowing for revision and continuous adaptation of theories and interview protocol when further necessary information has been discovered to include all relevant aspects.

4.2 Research Design

This study has been carried out using a qualitative approach, employing semi-structured interviews. This format allowed greater elaboration and freer expression from the participants. Additionally, this approach gave the authors deeper insights into the interviewees' experiences, perspectives and emotions, allowing for a more nuanced understanding of the research topic, and enriching the data collected. By allowing the conversation to flow beyond the constraints of questionnaires or structured interviews, more complex themes and meanings were able to be explored.

The study is designed as exploratory research to understand and interpret how teachers' perceptions and attitudes affect change in the context of AI. Additionally, the research was carried out as a cross-sectional study, focusing on the present complex environment that AI is currently in to understand the perception in an uncertain and changing world.

4.3 Research Method

4.3.1 Data Collection

4.3.2.1 Sample Selection

The population of interest was teachers from upper-secondary schools in Stockholm. Five different schools were contacted via mail (*Appendix A & B*) and interviews were conducted in four of the

schools with 13 different teachers (*Table 1*). The sample size had an equal number of women and men and had teachers from different subjects, with different amounts of teaching experience and different ages of the interviewees to allow for varied perspectives and opinions, leading to more representative results where biases by teachers from various subjects, ages, etc. were reduced. Furthermore, the teachers had differing experiences, knowledge and attitudes towards AI, making the sample well-rounded.

4.3.2.2 Data Analysis

After the interviews were transcribed, the empirical data was used to carry out a thematic analysis to distinguish overarching patterns and themes in all interviews to answer the Research Question (Saunders et al., 2019). The transcripts were coded and analysed to find relations and after discussions, the empirics were reviewed again to come to agreements regarding results found. Ultimately, concepts were identified from the data and combined into overarching themes, key to uncovering the aggregate dimensions that are the basis of our findings.

No	School	Date	Length	Sector
1	School A	2024-03-05	83 min	Public
2	School A	2024-03-05	88 min	Public
3	School A	2024-03-05	66 min	Public
4	School A	2024-03-07	47 min	Public
5	School A	2024-03-07	51 min	Public
6	School A	2024-03-11	35 min	Public
7	School A	2024-03-12	75 min	Public
8	School B	2024-03-14	54 min	Private Non-Profit
9	School C	2024-03-14	76 min	Public
10	School C	2024-03-21	40 min	Public
11	School B	2024-03-21	36 min	Private Non-Profit
12	School B	2024-03-21	32 min	Private Non-Profit
13	School D	2024-03-21	60 min	Private Non-Profit
Minimum	32 min	Maximum	88 min	Average 57 min

Table 1: Interview Overview

4.3.2 Interview Process

Semi-structured interviews were conducted to allow elaborate answers, also allowing the gaining of additional knowledge regarding perspectives overlooked. The interviews were divided into eight different sections (*Appendix C & D*) to get a good overview of the teachers, their experience and perception of AI and change, helping flow and structured note-taking, easing the ensuing analysis.

Interviews were conducted in the span of two weeks and ranged from 32 to 88 minutes averaging 57 minutes. Every interview was conducted in person, allowing for a better understanding of tone usage and body language. It also enhances the relationship with the interviewee, increasing trust and willingness to provide transparent answers to questions. When deemed necessary, follow-up questions were asked to get additional information that might have been missed otherwise. The abductive method chosen, helped the authors revise the RQ and theoretical concepts afterwards when useful information was discovered.

4.4 Method Discussion

4.4.1 Method Validation

The methodology chosen will not be evaluated on reliability and validity as they are often criticised in qualitative, interpretive studies for being philosophically and technically inappropriate since reality is seen as multifaceted and socially constructed (Saunders et al., 2019). Instead, credibility, transferability, dependability, and confirmability will be used. Credibility will be ensured by interviewing people from multiple schools to reduce biases and allow for multiple viewpoints, both authors analysing the data and reviewing the results, and assessing multiple theoretical perspectives before choosing the most appropriate ones. Loss of credibility due to misinterpretations and discrepancies in the translation of quotes was reduced by sending the quotes to the interviewees to confirm accuracy. Transferability of the study is possible to other educational institutes such as primary school or universities since teachers throughout the whole education system have experienced similar environments and undergone similar educations. However cross-country transferability is more difficult to assure since attitudes and technological development vary greatly across countries (Gillespie et al., 2023). Dependability has been enhanced by continuously keeping journals to revise previous changes and keep track of progress. The authors also provide a detailed description of the methodology and design of the study in order to increase dependability further. Lastly, to ensure confirmability, both authors tried to be present during every interview to catch mixed interpretations. Both authors conducted their own analysis, drawing conclusions, before discussing and assessing potential ambiguities together.

4.4.2 Ethical Concerns

Since interviews have been conducted with participants, sensitive data will be handled. To ensure privacy and transparency, all interviewees were asked to sign a consent form explaining that only gender, age, teaching subject and years in the profession will be used (*Appendix E*). All data was collected following the Stockholm School of Economics guidelines and GDPR to ensure that the safety and integrity of the participants were maintained. AI has also been used as a complementary tool (*Appendix F*)

5. Empirics

This section will present the empirical results from 13 interviews, giving a representative view of the opinions heard. The section will start with (1) an overview of the empirical data and an empirical acknowledgement and (2) a review of the thematic analysis

5.1 Empirical Overview and Acknowledgments

The teachers acknowledge that their role is pivotal in preparing students for their future. However, a majority of interviewees do not feel equipped to tackle problems presented by AI. A common denominator was that there still is a lack of knowledge and education regarding AI within the education system, increasing scepticism and uncertainty. Coupling this with a common perception of previous changes as non-beneficial makes change difficult. Nonetheless, a consensus was that AI is something inevitable that cannot be ignored. Consequently, although the future is uncertain, future change will be imminent and teachers need to adapt and understand how to handle the tools presented.

An empirical acknowledgement was that the interviewees talked in terms of opportunities and threats when explaining their acceptance and resistance as their driving and restraining forces. Therefore, the authors will use the terms opportunities and threats synonymously with driving and restraining forces in the continuance of the study.

5.2 Thematic Analysis

By conducting a thematic analysis (*Figure 4*), interesting results were found regarding the acceptance-resistance dilemma as well as what forces affect this perception. These perceptions were driven by three predominant forces: (1) *Social Identity Perception*, (2) *Knowledge Perception*, and (3) *Educational Change Perception*. These forces are what ultimately determine a teacher's acceptance towards AI change. Further supporting quotes are put in *Appendix G*.

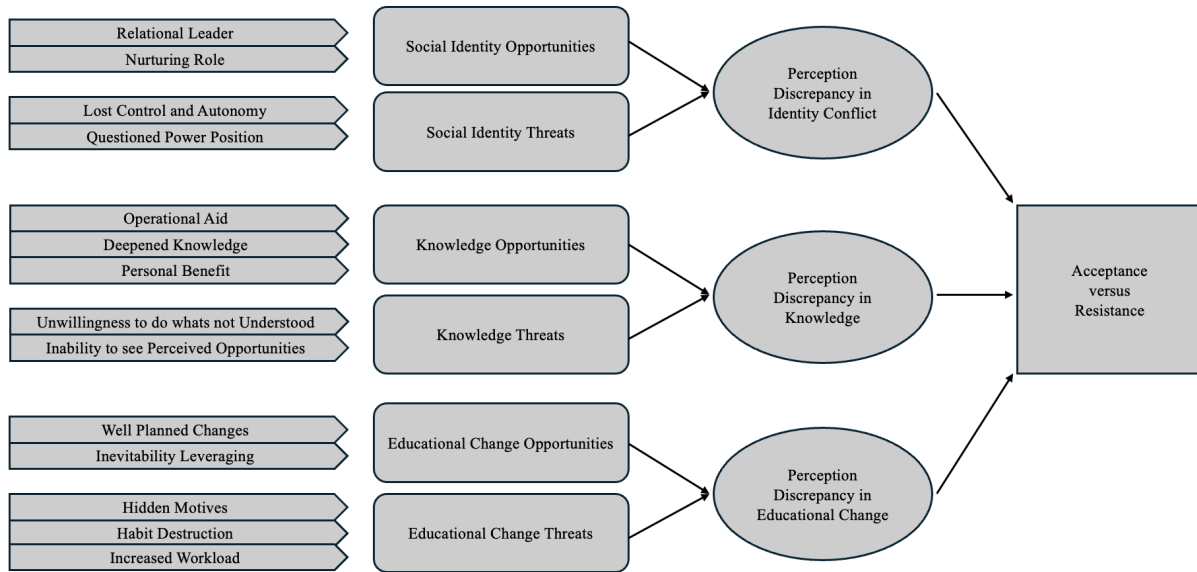


Figure 4: Thematic Analysis

5.2.1 Perception Discrepancy in Social Identity

The interviewees perceived the implementation of AI into education as potentially role and identity-altering for them as teachers. Arguments and those who perceived AI tools as an opportunity for their identity made the individuals more inclined to accept change while teachers who saw risks of it undermining their teaching identity saw it as a threat and resisted change.

5.2.1.1 Social Identity Opportunities

Relational Leader

Some teachers believe that AI can redefine the teacher's role, strengthening teacher-student relationships, and emphasising the importance of becoming a relational leader to their students. Even though AI can improve learning, most interviewees believed that the social dimension of teaching is irreplaceable. Consequently, rather than viewing change in their roles as something threatening, they see an opportunity to transition from being information providers to role models.

"[If AI will change the teachers' role] It can't replace it. (...) I still believe that there is a lot to do with relationships and role modelling." - T4

"I may not be the educator anymore, instead I may be more of a mentor. (..) [Is this a fear?] A fear? No, I still believe I have no problem because I know that the school is a comfort for many who come here. So it is a safe place." - T2

"I think this is something that Corona really showed us, (...) you didn't have this personal relationship, you realised how important it is." - T11

Additionally, teachers emphasised the unique human attributes of empathy and understanding, fostering trust, which AI is unable to do. The human touch encourages students to listen to their teachers' guidance and support. Strengthening this bond enhances trust and paves the way for increased transparency and commitment, increasing student engagement and learning.

"But I think students will still have a lot of faith in their teachers. (...) The personal relationship between student and teacher is difficult to replace." - T10

"And I think it will become even more important [Relational role]. (...) It is by creating a relationship that you can set the level." - T3

Several educators anticipate that AI will take responsibility for time-consuming administrative tasks which is currently a common issue leaving teachers with little time for direct student support. Thus, AI helps teachers to pursue more fulfilling activities and personalised assistance. A perceived opportunity, significantly enhancing the learning experience for students.

"Yes, absolutely [AI taking administrative responsibility]. Because the goal is that all students should feel that I really got the time, (...) not that you just rush 45 seconds per student." - T6

"The fact that some monotonous, unnecessary tasks can be handled and that frees up time and energy. And then it feels like I as a teacher can do much more of what I want to do." - T7

Nurturing Role

Another important role of teaching, mentioned, is nurturing and fostering student growth and development. Teachers have an important role in shaping students into good citizens for society. Some expressed that reshaping teaching roles could increase their possibilities to focus on this increasing fulfilment. The empirics highlight that regardless of AI's ability to revolutionise the way knowledge is delivered, it still lacks the capacity to understand and nurture the moral and ethical dimensions, which teachers find crucial and fulfilling.

"But maybe also become some kind of social supervisor, (...) focus more on the foster care assignment. (...) I would probably like that personally." - T5

"This is explicitly one of the school's most important tasks. To nurture. (...) You have a social role that is enormous. You shape them." - T13

"I always think that my role is to prepare my students for university studies and for life in general. And so I want to give them the tools they will need." - T10

5.2.1.2 Social Identity Threats

Lost Control and Autonomy

Some teachers feel threatened that AI could take over their responsibilities. They fear the loss of control over teaching practices since the autonomy and decision-making power that teaching traditionally offers is cherished. For instance, losing responsibility for being the first-hand educator, providing students feedback or grading would undermine their sense of control. Furthermore, some argue that it might lead to teachers being responsible for mundane and boring tasks and increased workload as they are stripped of engaging responsibilities. Potentially risking de-professionalisation of the profession, according to some educators.

"There are those who have compared the teaching profession to the priest profession. (...) You have a lot of freedom. (...) it would of course be severely restricted [Freedom]." - T1

"If it were to be the case that we only learned to become some kind of administrator of AI, I wouldn't like that." - T5

"Have received more aids? Yes. Have I gotten more to do? Yes. (...) The more technology we have, the more things we have to do." - T8

Some teachers fear AIs' potential to take over their work completely, automating the profession in the future, and leaving them unemployed, leading the concerned teachers to resist change.

"I think that many, many teachers are a bit afraid of this [AI] because they think that, well, now this will take over my job." - T2

Questioned Power Position

A recurrent concern was the threat to their authority and expertise. Traditionally, teachers derive power over students by possessing more knowledge. AI bots have allowed students to gain knowledge at a faster rate while teachers have not kept up. This development has shrunk the knowledge gap, altering the traditional power relationship in the classroom. Furthermore, students might believe that

AI possesses more knowledge than teachers, and is more helpful, further reinforcing the loss of power. Teachers dislike this, as they believe that their power is attributed to their intellectual superiority. Consequently, they resist changes that threaten their power position and social identity.

"Where it's not me who has the answers. Which then will be really hard. (...) But I think there are some people who never would. Because you become much more equal." - T3

"Many colleagues who would find that a bit threatening and a bit difficult [AI]. There's this attitude that the teacher has to be the smartest (...) then an artificial robot comes (...) that in many ways seems smarter. That can make things a bit difficult." - T13

"The first thoughts and feelings I have already had (...) then it was tough and a feeling of losing control." - T4

A consequence of the teacher's knowledge and expertise being questioned is fear that students will undermine their authority. Since they would no longer be the superior holders of knowledge, students might disregard the teacher and solely trust AI. This change not only threatens the teacher's identity but also risks challenging the traditional teacher-student dynamic, damaging motivation and willingness to teach.

"That actually questions our entire profession. (...) Our status and authority may not be as clear as before." - T5

"I would probably think it was sad that we don't have any more [Power]. Well, we're not a monopoly on knowledge now, but we do have some kind of authority." - T8

5.2.2 Perception Discrepancy in Knowledge

AI knowledge of interviewees proved to be important in their perception of threats and opportunities. A majority of interviewees believed they lacked knowledge of AI and that without proper education they neither would, nor be able to, implement it. A gradual increase in implementation willingness was found to occur when teachers' knowledge increased since more opportunities were apprehended.

5.2.2.1 Knowledge Opportunities

Operational Aid

The burden of the teachers were discussed in the interviews, and unbeknownst to some teachers, the implementation of AI tools could mean less administrative burden on planning, something seen as an

opportunity. Presenting the empirics of operational aid, interviewees described issues related to personal adaptations of the material which they owned and used in classes.

*"But in some schools I have to make thirty-one adjustments. (...) Do I see AI as a tool for that?
[Making adjustments] Absolutely." - T8*

In this case, the teacher had realised that a potential way to enable individually adapted education was the implementation of a virtual helper. Another example of this perceived opportunity is related to the same topic but regarding administrative help.

"It's something (...) that would somehow reduce the overall workload, Which is usually the point of technology." - T9

The quote showcases the potential implications an adaptation of new technology could have. Alluding to the aforementioned, another teacher upheld the opportunities in their role as a scheduler for their department, where AI tools automate tasks.

"I (...) make the schedule, that's a new thing. And there we have, among other things, an AI service that can add it, which partially automates it." - T11

Deepened Knowledge

AI also has the opportunity to deepen knowledge, reducing the need for learning basic concepts. There were teachers who drew a parallel to how the introduction of calculators and computers affected the human perception of basic knowledge.

"So it should be done so that you can do more complicated things. Exactly. With the help of it, like a calculator." - T8

The parable was used by the interviewee to showcase that a future potentially only entails us learning AI, disregarding how it works. This was seen as positive, possibly enabling students to delve deeper into subjects whilst omitting the basics, instead understanding difficult subjects and complexities easier.

"Seeking information is something that we will hand over to [AI]. We will find things more easily accessible to us. So in terms of knowledge, really, we'll probably be a little sharper. (...) We will be able to do more." - T9

Personal Benefit

A finding from the interviews was that the personal opportunities in education presented contributed to their perception and in the long run how prone they were to accept or resist change showcasing how perceived opportunities spur motivation and acceptance.

"Well, I have read what it can do. And I'm extremely fascinated by it. I see many ways that it can benefit me and I want to use it." - T8

5.2.2.2. Knowledge Threats

Unwillingness to do what's not Understood

Interviews show that resistance to change increases when impacted teachers do not understand AI and the change-implementation process.

"Of course we should learn this technology, (...). It's a fantastic tool. But, if you don't know what to do, it doesn't matter how strong the tool is." - T8

The interviewee explains that without clear comprehension they will not implement change. Without more knowledge, AI will be seen as a threat and the change process will seem difficult.

"I actually think it's ignorance. That you simply don't know what it is, how it works and what to use it for." - T8

The ignorance and negative perception towards integration is presented above and means that interviewees are not interested in starting initiatives when they are not knowledgeable of this technology.

"So I guess I tend to use the tools I'm very familiar and comfortable with. I probably pretty much stick to what I know." - T13

This shows that the usage of well-known inhibits the opportunity for new tools to emerge, especially when change is not needed.

Inability to see Perceived Opportunities

Without perceived opportunities and benefits from a change, teachers do not want to acquire the necessary skills for it to run optimally. If one is not able to see that, they are more likely to resist implementation.

"I think we haven't had enough training in it, so that's why right now most of my colleagues are also negative." - T6

The inability to see the perceived opportunities alludes to all four quotes above, where the resistance becomes present, lacking driving forces perceived to compensate for the restraining forces. As mentioned, the lack of knowledge and education hinders the adoption level. Those who know the least, resist change the most.

5.2.3 Perception Discrepancy in Educational Change

The interviews indicated that the perception of top management and decision-makers was crucial in the acceptance of change as well as their experience of how previous changes have panned out. Distrust in decision-makers' abilities to achieve beneficial changes leads to increased resistance.

5.2.2.1 Educational Change Opportunities

Well Planned Changes

The interviewees acknowledge that change can be accepted if clear instructions and justifications are made since they can recognise the usefulness and benefits. They are more likely to embrace changes that will benefit students or teachers. However, they also emphasised the importance of change being easily understood and implemented where complexity will increase resistance, otherwise becoming tedious and cumbersome. Teachers will accept change if motivated by a high probability of beneficial outcomes being achieved since this means they perceive more opportunities. Nonetheless, when the advantages of a change are not clear, resistance tends to escalate which highlights the importance of clear communication and visible benefits in facilitating organisational change.

"It happens often [Change], and as long as there is a good thought behind it it is okay. (...) It is much, much easier to accept when you understand why. And what you don't understand you of course resist."
- T8

"All changes are hard but some can be confronted with a different motivation because you realise that the result will be good." - T10

"You want it to happen for a reason [Change] and for it to be communicated transparently. And that you should be involved in the process." - T7

Inevitability Leveraging

A majority of interviewees said they believe AI is inevitable. Consequently, they see an opportunity in trying to embrace and leverage all positive aspects of AI, rather than opposing the inevitable. They believe that time and effort will be wasted by resisting something that will never disappear. Instead, they try to accept AI and use any potential benefits that it offers.

"It's not something you can be against [AI]. (...) People have accepted that it exists. (...) I wonder what we can make of it. Because we've already got the downside of it. (...) Then we might as well make something good out of it?" - T3

"This is going to happen sooner or later. So I don't think being resistant to it will help." - T12

Furthermore, some teachers have accepted that some changes are meant to be done and resistance complicates the transition. Further stated, teachers need to be professionals and embrace changes as an inherent part of their work, acknowledging that change is constant and unavoidable. It was also mentioned that a certain amount of digital literacy should be required, not merely seen as beneficial but as a professional obligation. Teachers are expected to acquire and update their knowledge to support their students' learning when needed, as in AI's case.

"You have to have a certain level of professionalism. You have to accept it. (...) It is my job to try to interpret these documents in a way that I think provides good knowledge." - T9

"There is a certain requirement [Digital literacy]. (...) I think it is really a civil service. So we should teach things about it." - T9

5.2.2.2 Educational Change Threats

Hidden Motives:

Some resistance is due to scepticism towards hidden motives behind proposed changes. Several interviewees highlighted that many changes and reforms worsen teaching conditions and are made with economic or political agendas rather than educational interests. Moreover, they argue that many changes are implemented without enough research or merely done to improve the school's image rather than improving functional outcomes. This perception and distrust leads to resistance to new changes and a cautious approach, questioning the intentions.

"I think it can cause quite a lot of problems [Non-transparent communication]. (...) There's an announcement when everything is ready and you haven't been able to follow the process."- T7

"There's no thought behind it, it's just (...) well, we do this, why? Well, we don't know. Everyone else does it, we do it too." - T8

"They disturb more than help [Organisational changes] and then it's also unclear what the goal is, whether it's a goal that really benefits the school or is it economic interests, political interests." - T10

Habit Destruction:

Some teachers resist change since they perceive uncertainty as a threat. Potential alterations in their roles, delegation of new tasks etc. contribute to instability and uncertainty. Previous experiences where change resulted in uncertainty and adverse outcomes amplify the resistance to change since more problems can arise. Consequently, educators prefer maintaining the status quo while favouring simplicity and familiarity over threats and uncertainties.

"It can create some uncertainty [Change]. (...) Will it affect my position? Some may not be able to continue working." - T7

"There are many people who are negative, that try to adhere to the old ways. (...) Sometimes I wish this wouldn't have happened [AI]." - T10

Another threat that AI causes is that teachers must acquire new competencies, something deemed tedious. Investing time into learning practices perceived to offer minimal benefits, increases resistance to change. People are habit-driven and changes of this magnitude threaten to disrupt routines and habits.

"We humans are creatures of habit. That is, we do what we have learned at some point." - T9

"I say let us teachers work in peace. We're pretty self-driven. (...) So I'm usually not too keen on organisational changes." - T10

"You throw something up and then we have to work in a certain way and then it becomes like it was before either way. (...) Is there any greater difference in how we teach today than in ancient times, for example?" - T13

Increased Workload:

Further resistance is created since several teachers believe that change invariably results in increased workload. Change often promises a reduction in workload and streamlined processes, however, it often tends to be the opposite, resulting in more work. Already overburdened, the threat of taking on additional work increases resistance to change.

"Always, yes [Organisational change increases workload]. (...) In the end, I just see it as a question of how much extra I need to work." - T9

"It should [be room for AI], but it's like always when you make a change. You have to pitch it so that people see the benefits of it. That it doesn't just become another administrative burden or another tool to be mastered or used." - T13

6. Analysis

The analysis is divided into two parts: (1) The Acceptance-Resistance dilemma found to be caused by perceived opportunities and threats and (2) the forces affecting the acceptance-resistance dilemma.

6.1 Opportunities versus Threats

From the interviews, a pattern emerged regarding teachers' acceptance or resistance to change, tied to perception. Observations showed a continuum between acceptance and resistance based on teachers' perceptions. The dichotomy in acceptance and resistance was found to be influenced by the teachers' perceived opportunities and threats associated with change. The teachers' perceptions regarding specific forces were divided into two groups: those seeing opportunities and those seeing threats of AI, where the magnitude of opportunities or threats perceived in different forces determined the placement on the continuum (*Figure 5*). Thus, forces that drive change are the opportunities teachers perceive and the forces restraining change are the threats. This aligns with Portela's (2022) literature suggesting that teachers resist changes they deem will worsen their situation or will be difficult to implement, acting as restraining forces (Burnes, 2013). An empirical example is one recently graduated teacher who was heavily resistant to AI due to being imprinted with perceived threats that AI brings. Ultimately, the magnitude of acceptance and resistance is dependent on the amount of opportunities and threats perceived. Thus, to increase acceptance, there needs to be an increase in perceived opportunities, reduction of threats perceived or new opportunities perceived.

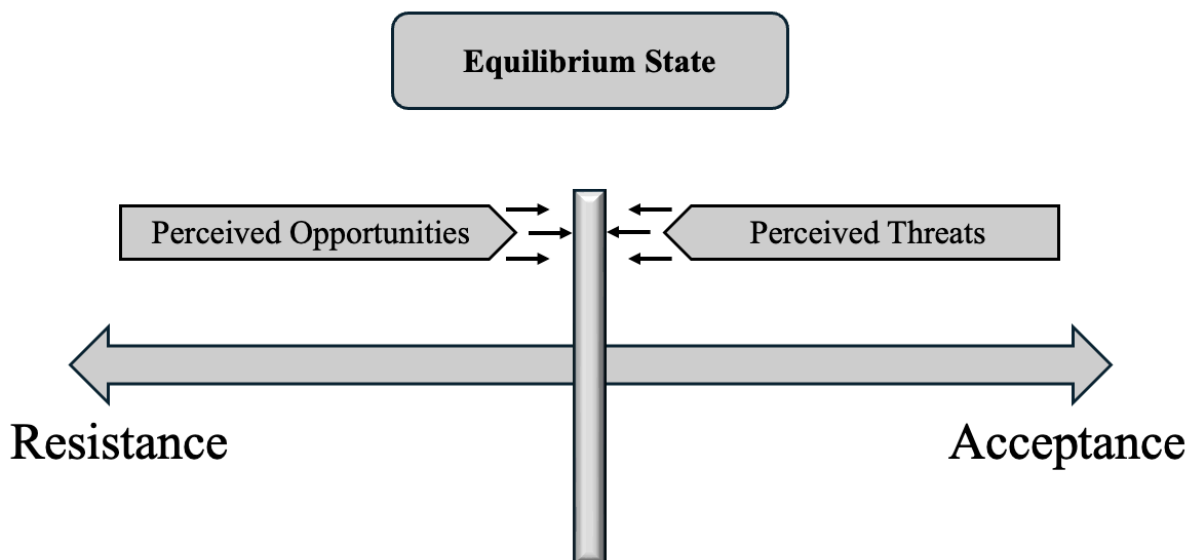


Figure 5: Acceptance-Resistance Continuum Model 1 (Wessberg & Ståhl, 2024)

6.2 Identified Opportunity and Threat Forces

Three main forces were found where the opportunities and threats affect the acceptance and resistance of change: (1) Social Identity, (2) Knowledge and (3) Educational Change.

6.2.1 Social Identity

The perceived opportunities and threats involving the teachers' social identity affect the level of acceptance, as teachers highlighted that their acceptance increased when they perceived opportunities to improve their teacher-student relationship and nurture them, aligning with theory, explaining that drivers increase acceptance, in this case being the opportunities to make teaching more relational (Burnes, 2013).

Lucking et al. (2016) explain how AI can transform the teacher's role, allowing more freedom and relational teaching. The interviewees who perceived AI's transformative power similarly saw it as an opportunity and accepted change. However, contrary to Luckin et al. (2016) the empirics suggest that not all teachers believe that AI transforming their role will be beneficial. Some believe that authority will be lost as seen in the quotes, increasing resistance. Ultimately, teachers who see the transformative power as a threat will resist while the opportunistic teachers will accept change, in accordance with Burnes (2013). Contradicting the literature of VanLehn (2011), instead of jeopardising interaction, several interviewees believed AI would enhance relationships, proving that the teachers' perception of opportunities is what drives acceptance.

Similarly, undermined authority and questioned power are seen as significant threats towards their social identity, acting as restraining forces. Change that could affect the teaching status were deemed threats, increasing resistance to change, congruent to Krantz and Fritzén (2017) and Frostenson's (2015) literature, emphasising the negative effect de-professionalisation has on acceptance.

Furthermore, Krantz & Fritzén (2021) highlight autonomy as crucial for teacher acceptance since decreased autonomy reduced meaningfulness and relevance, reinforced in our findings where a positive relationship between autonomy and acceptance was observed, insinuating that when autonomy is believed to decrease with change, it will be perceived as a threat, amplifying resistance (Burnes, 2013).

6.2.2 Knowledge

From the empirics, it became evident that the knowledge that teachers have about AI impacts their confidence in using such technologies. Teachers who had a comprehensive understanding of AI saw more PU and higher PEOU, consequently making them see the opportunities of the technology, and increasing their acceptance of change in alignment with Davis (1989). Furthermore, when less knowledgeable teachers heard ways AI could support their work, they became more accepting since they saw PU and opportunities. Pöyhönen (2004) express how sharing information between staff members enables acceptance. However, Markova (2006) believes that knowledge is a driver for change while the empirics suggest that it could be a driver when the knowledge gained leads to perceived opportunities, but, knowledge could also be an obstacle when threat perceptions surface from new knowledge, proving that knowledge does not always induce acceptance.

Understanding technology also mitigates fears and uncertainties, as teachers feel more in control supported by a majority of teachers who explained how their perception has changed positively as time has passed due to increased understanding, increasing perceived opportunities and reduced threats. Graham (2002) reinforces that knowledge enhancement and uncertainty reduction increase acceptance since fears are reduced and opportunities discovered. Following Luckin et al. (2016), empirics showed resistance to AI since how it gets its output is unknown which connects to the resistance where the rationale of a decision cannot be explained creating uncertainty. Furthermore, resistance due to fear of AI making traditional teaching methods obsolete and deprofessionalising the teacher's role is presented by those less knowledgeable, showcasing the need for education to gain a fair picture of the technology.

Resistance can also stem from insufficient training and resources being available. If teachers feel unprepared to implement new technologies, they resist its adoption because they do not feel equipped to handle the transition. Kabudi et al. (2021) explain how resistance to implementing new technology due to lack of trust is common since large-scale implementation has not been done yet, even though the technology is developed enough. Ultimately, the resistance comes down to a lack of understanding, leading to an unwillingness to try.

Affecting willingness for change by changing individuals' behaviour can be done by providing supplementary education according to interviewees. This leads to increased acceptance and is supported by Burnes (2019) as this can be seen as the unfreezing part in a three-step model re-educating the teachers, breaking normative behaviour and asserting new adapted behaviour.

6.2.3 Educational Change

Empirics highlighted that teachers' trust in the educational system, people responsible for change and how previous changes have panned out affect acceptance. The interviewees stated when previous changes had been complicated or perceived unnecessary they saw potential problems with changes and predicted failure. Thus, new changes are perceived as threats and therefore resisted. Ball (2017) and Krantz and Fritzén (2021) explain how changes perceived to compromise work will lead to resistance, aligning with empirical findings. Sarason (1995) asserts that change not anchored in the existing culture and beliefs of teachers will fail. Conversely, interviewees note that well-planned, beneficial change aligned with values can be confronted with more motivation.

Additionally, resistance is fueled by humans naturally resisting change since educational practices are deeply ingrained, leading to behaviours and norms continuously being reinforced. Therefore, Burnes (2019) emphasises the importance of re-educating and changing individuals' behaviours and values for them to accept change which all interviewees deemed necessary as this also likely increases PU and PEOU. Interviewees also mentioned that their acceptance increased when change seemed inevitable, “forcing” them to take advantage of the change, leading to them gaining knowledge and discovering more opportunities. Thus, restraining forces (threats) stay the same while additional driving forces (opportunities) are found, pushing the quasi-stationary equilibrium towards acceptance (Burnes, 2013). Furthermore, Krantz and Fritzén (2021) argue that teachers' trust, power and motivation are negatively affected by the externalisation of decision-making supported by interviews as teachers feel decisions cannot be trusted and made with alternative motives. Chasignol et al. (2018) argue that meaningful learning never requires technology and if it does, scepticism about who benefits should be considered, where in this case teachers believe that politicians or schools do it for personal gain.

Luckin et al. (2016) support the idea that teachers will lose control when feeling like they have no power in implementation, leading to resistance since without teachers helping to design implementation, they lose out on technological literacy and understanding of what AIED systems can offer. This prevents acceptance since PU and PEOU through increased knowledge and digital literacy will improve attitude to use, thus, increasing acceptance (Davis, 1989). This shows that including teachers in the change process and relationship-building between teachers and decision-makers will increase perceived opportunities and trust, enhancing acceptance (Luckin et al. 2016). Interviewees support that inclusion in the decision-making phase increases their commitment as they can express worries, and suggestions, and feel ownership of change. Shamir-Inbal et al. (2011) explains how involvement will help them cope with changes, reinforced by interviewees stating that feelings of lost autonomy and power reduce when included, making them inclined to accept change.

7. Discussion & Conclusion

7.1 Answer to the Research Question

After analysing the empirical data several conclusions can be drawn based on the research question where three main findings have been highlighted:

- 1) Acceptance and resistance of educational change are not two distinct opposites, instead, it is a continuum where the degree of acceptance and resistance faced is dependent on the opportunities (driving forces) and threats (restraining forces) perceived.

The empirics showed that the teachers had varying degrees of acceptance or resistance towards change and that the acceptance or resistance depended on the magnitude of opportunities and threats they perceived. This implies that acceptance and resistance are not binary opposites, instead, it is a continuum of different levels of acceptance or resistance depending on different forces where changes in perception will affect placement on the continuum i.e. acceptance.

- 2) The opportunity and threat forces that affect the placement on the acceptance-resistance continuum are (1) *Social Identity Conflict Discrepancies*, (2) *Knowledge Discrepancies* and (3) *Educational Change Discrepancies*

The thematic analysis indicated that there are three primary forces that affect the placement on the acceptance-resistance continuum. The amount of opportunities and threats perceived in these forces will determine where the quasi-stationary equilibrium will be put (*Figure 6*). Social Identity refers to the effects on the individual's teaching role, Knowledge refers to the level of understanding of the technology and its effects and Educational Change refers to the individual's trust in decision-makers and experience with previous change.

- 3) Teachers are not resisting change due to a fear of the technology itself, instead, it rather seems that the fear is based on uncertainty, organisational distrust during change and exclusion of involvement in decision-making.

A majority of the teachers did not resist and fear the technology itself, instead, the underlying issues stemmed from distrust in externalised and top-management decision-making and an uncertainty of how change would affect the teachers as well as how difficult the implementation would be. The interviewees explained how they did not have trust in the school management and decision-makers

abilities to implement beneficial and sustainable changes without doing them for personal gain. Uncertainty regarding how the implementation would pan out and how it would affect the teachers and schools themselves was also seen as a major cause for resistance while the interviewees seldom talked about how the technology in itself would be a factor for resistance.

Additionally, findings to add more nuance were for instance that for change to happen teacher behaviour needs to be changed by re-educating them and giving them additional knowledge because if behaviour is not changed, change will not be accepted. Interviewees highlighted additional education as the main tool to increase acceptance since it could help change norms, values and beliefs. Another finding was that interviewees believed that increased knowledge regarding the technology could improve perceived opportunities. They exemplified that they were hesitant to AI in the beginning but once more knowledge was acquired, they became more accepting as they saw potential ways of using it and how it could be done.

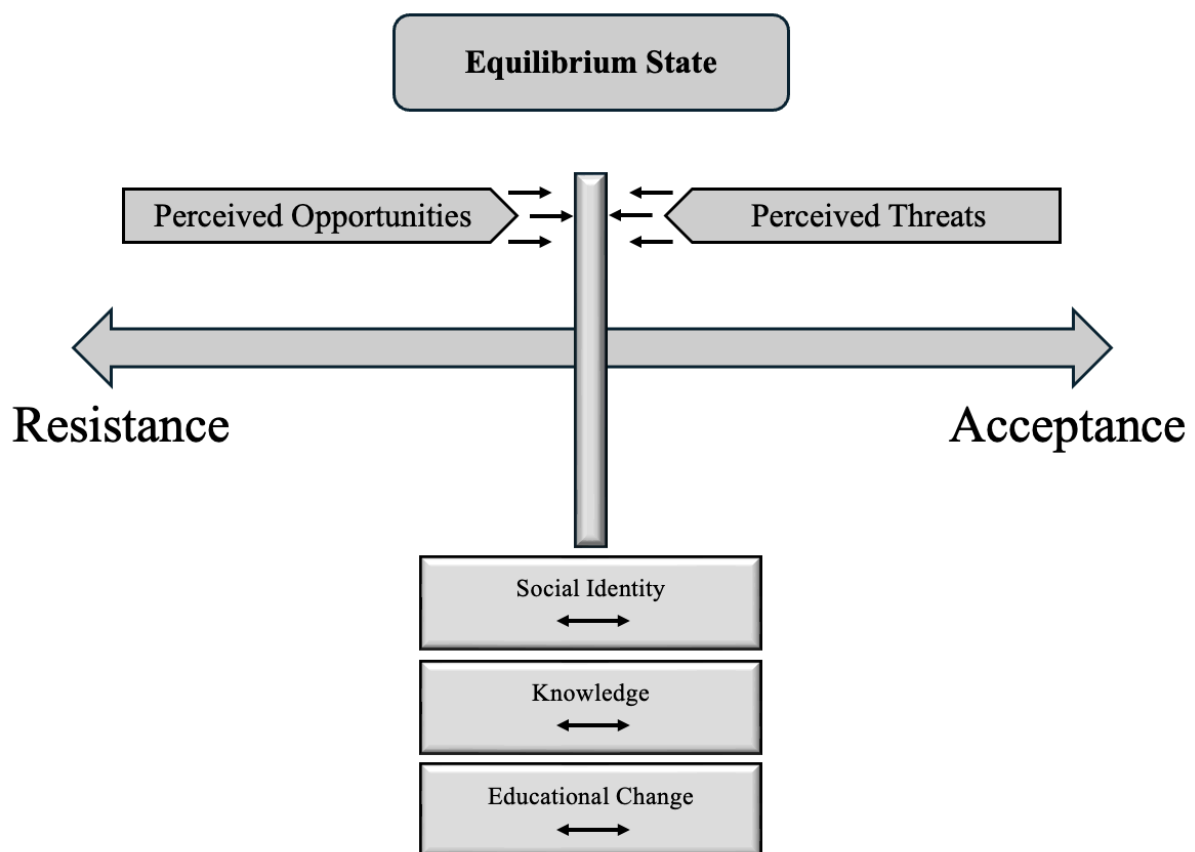


Figure 6: Acceptance-Resistance Continuum Model 2 (Wessberg & Ståhl, 2024)

7.2 Contribution to Existing Literature and Theory

The study is one of the first of its kind, researching teacher perception of educational change in Swedish upper-secondary schools from an artificial intelligence perspective. Combining interdisciplinary research has enabled understanding and theoretical development that contribute to increased clarity in the research field.

The study aligns with previous change management literature and theory stating that acceptance of change is dependent on driving and restraining forces, determining an individual's willingness to accept change (Burnes, 2013). The empirics also show that teachers see their driving and restraining forces in terms of perceived opportunities and threats, making them key factors to attend to. Furthermore, the study contributes to the change management field by concluding that there are different forces that affect a teacher's acceptance of change where acceptance and resistance are a continuum rather than two binary opinions. Consequently, different levels of acceptance or resistance are experienced depending on the individual's perceptions of the affecting forces.

Similarly to previous educational change studies (Sarason 1995; Krantz and Fritzén 2021), the empirics show that inclusion of teachers in decision-making and implementation processes is crucial for acceptance since low trust in decision-makers and a feeling of low power leads to resistance. Moreover, the addition of a technological theory in the study assisted in understanding that enhanced knowledge is critical to increased acceptance since additional knowledge helps teachers understand the PU and PEOU of the technology, consequently impacting their attitude positively (Davis, 1989).

The study also contributes new findings to the literature since the empirics showed that teachers are not scared of technology itself, instead, they are threatened by the uncertainty that comes with change proving that it is not the tool in itself they are resisting instead it is the consequences induced.

7.3 Limitations of the Study

The study is subject to some limitations. Firstly, since the study is performed through a constructionism and interpretive perspective, all the data acquired has been interpreted and formed by the authors, meaning that the perceptions and biases might affect how fairly the data has been presented. Secondly, the results can be affected by the sample group interviewed. Since people want to be perceived as positive and optimistic, the results might be slightly skewed to the more optimistic and accepting side which should be taken into account when reading. Finally, the small sample size makes the study more susceptible to outlying opinions, making it an important consideration regarding the generalisability of larger populations.

7.4 Suggestion for Further Research

Research could be done to find mathematical rigour and weightings on the forces to gain a better understanding of how they affect acceptance and resistance. Further research could potentially also include a broader, quantitative research method, where the findings of this study are controlled towards further variables and on a larger sample that may be a better representation of the overall population of teachers in Sweden. Much like our interviews found out on a personal level, the individual perceptions may change when controlling for certain subjects, where certain subjects may provide a better reflection of the issues and opportunities related to the technology, especially in relation to its impact on change on an organisational level. Lastly, performing a longitudinal study investigating how teachers' perception evolves over time as they gain experience could prove interesting.

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9. Appendices

Appendix A: Email to Potential Interviewees (English)

Hello [NAME],

I hope you are doing well! I am currently studying at the Stockholm School of Economics where I am working on our bachelor's thesis together with my thesis partner. Our research project focuses on teachers' perceptions towards the integration of artificial intelligence (AI) in the education system and its impact on organizational change. The question is *"How are teachers' perceptions towards the integration of AI in the education system affecting organizational change?"*. My colleague and I would be very interested in hearing your thoughts and opinions on the use of AI in the education sector. Therefore, we would appreciate the opportunity to conduct an interview with you.

The interview is expected to last approximately one hour and will consist of semi-structured questions aimed at exploring your perspectives. It is important for us to emphasize that the aim of the interview is only to collect your views with no intention to influence or change them.

All information shared during the interview will be treated with strict confidentiality. Your answers will be presented anonymously, and no personal data will be stored or used after the end of the project. We will also send you a GDPR form for your review and signature, which explains how your information will be handled and deleted after the end of the project.

We are flexible and happy to adapt to your schedule. We will come to the school to make it easier for you! Is there a day or time that suits you best?

I look forward to hearing from you!

With kind regards,

Rasmus Wessberg

Appendix B: Email to Potential Interviewees (Swedish)

Hej [NAMN],

Jag hoppas att du mår bra! Jag studerar för närvarande på Handelshögskolan i Stockholm där jag tillsammans med min uppsatspartner arbetar på vår kandidatuppsats. Vårt forskningsprojekt fokuserar på lärares uppfattningar om integreringen av artificiell intelligens (AI) i utbildningssystemet och dess inverkan på organisatoriska förändringar. Frågan lyder ***“How are teachers' perceptions towards the integration of AI in the education system affecting organizational change?”***. Jag och min kollega skulle vara mycket intresserade av att få ta del av dina tankar och åsikter kring användningen av AI inom utbildningssektorn. Därför skulle vi uppskatta möjligheten att genomföra en intervju med dig.

Intervjun beräknas ta cirka en timme och kommer att bestå av halvstrukturerade frågor som syftar till att utforska dina perspektiv. Det är viktigt för oss att betona att målet med intervjun endast är att samla in dina synpunkter utan avsikt att påverka eller förändra dem.

All information som delas under intervjun kommer att behandlas med strikt konfidentialitet. Dina svar kommer att presenteras anonymt, och inga personuppgifter kommer att sparas eller användas efter projektets avslutning. Vi kommer även att skicka ett GDPR-formulär för din genomgång och signatur, vilket förklarar hur din information kommer att hanteras och raderas efter projektets slut.

Vi är flexibla och vill gärna anpassa oss efter din tidsplan. Då tar vi oss ut till skolan för att underlätta det för dig! Finns det någon dag eller tid som passar dig bäst?

Jag ser fram emot att höra från dig!

Med vänliga hälsningar,

Rasmus Wessberg & Sebastian Ståhl

Appendix C: Interview Question Guide (English)

Introduction to AI:

1. Could you briefly describe your teaching background and experience with technology in education?
 - a. How familiar are you with AI technologies currently being used in education?
2. How would you judge your knowledge regarding AI (rank on a scale of 1-10)?
 - a. AI in general
 - b. Current usage of AI in general
 - c. AI in education
 - d. Current usage of AI in education
3. How would you rate your comfort level with using technology in general?

Perception towards AI:

4. What are your initial thoughts or feelings about integrating AI into the education system?
 - a. Can you describe any specific experiences or scenarios that shaped your perceptions of AI in education?
5. Do you think AI can benefit your teaching and your students' learning?
 - a. If yes, how?
 - b. If no, why?
6. What concerns do you have about the integration of AI in education?
 - a. What do you think are the potential risks or downsides of using AI in education?
7. Has your perception of AI in education or in general changed over time?
 - a. What has caused this change?
8. How do you think the use of AI in education affects the dynamics between teachers and students? Does it enhance engagement, collaboration, or communication?
9. Do you think AI will affect the way you teach?
 - a. If so how?

Readiness for implementation:

10. Would you want to implement AI into your teaching practices?

If implementation was to happen:

11. How equipped do you feel to implement AI tools into your teaching practices?
12. What kind of support or resources do you think teachers need to effectively use AI in education?
13. Do you think AI could change the role of teachers in the classroom?

If so:

- a. How would the role change?
 - i. Would this be a change you like or not?

1. Why would you like/dislike this?

Experience with AI:

14. Can you share a specific instance where AI positively or negatively impacted your teaching or your students' learning?
15. How have teachers had to adapt to take into account AI?
16. How has school had to adapt to take into account AI?
17. Has there been any problems with adapting to AI?

Organization:

18. What do you perceive as the biggest barriers to adopting AI in education within your institution?
19. What opportunities do you believe AI integration presents to your institution? (if any)
20. What problems do you believe AI integration presents to your institution? (if any)
21. How do you think the perceptions of AI among the teaching staff influence the outcomes of its integration in education?

Perception of others in the organisation:

22. How would you describe the general acceptance and perception of AI in the teaching staff in school?
23. Does your perception differ from the general perceptions of teachers at school?
24. How would you describe the school's perception of AI?
25. How do you think your school's perception is compared to other schools?

Organizational change in general:

26. What is your general view on organisational change in schools?
27. What major changes have you experienced in the school system before? Reflect on them.
 - a. What did you think about these changes?
28. How do you think your views on organizational change compare with those of other teachers in the school?

Open-ended final question:

29. Is there anything else you would like to share about your perceptions of AI in education?
30. Is there something else you think is important to talk about/mention?

Appendix D: Interview Question Guide (Swedish)

Introduktion till AI:

1. Skulle du kunna beskriva din undervisningsbakgrund och erfarenhet med teknik runt utbildning kortfattat?
 - a. Hur bekant är du med AI-teknologier som för närvarande används inom utbildning?
2. Hur skulle du bedöma din kunskap av AI (ranka på en skala från 1-10)?
 - a. AI i allmänhet
 - b. Nuvarande användning av AI i allmänhet
 - c. AI inom utbildning
 - d. Nuvarande användning av AI inom utbildning
3. Hur skulle du bedöma din komfortnivå/bekvämlighet med att använda teknik i allmänhet?

Syn på AI:

4. Vad är dina första tankar eller känslor om att integrera AI i utbildningssystemet?
 - a. Kan du beskriva specifika tillfällen eller scenarier som har format din uppfattning om AI inom utbildning?
5. Tror du att AI kan gynna din undervisning och dina elevers lärande?
 - a. Om ja, hur?
 - b. Om nej, varför?
6. Vilka bekymmer/orosmoment ser du kring integreringen av AI inom utbildning?
 - a. Vad tror du är de potentiella riskerna eller nackdelarna med att använda AI inom utbildning?
7. Har din uppfattning om AI inom utbildning eller i allmänhet förändrats över tid?
 - a. Vad har orsakat denna förändring?
8. Hur tror du att användningen av AI inom utbildning påverkar dynamiken mellan lärare och elever? Förbättrar det engagemang, samarbete eller kommunikation?
9. Tror du att AI kommer att påverka sättet du undervisar på?
 - a. Om så, hur?

Förberedelser för implementering:

10. Skulle du vilja implementera AI i dina undervisningsmetoder?

Om implementering skulle ske:

11. Hur välutrustad känner du dig för att implementera AI-verktyg i dina undervisningsmetoder?
12. Vilken typ av stöd eller resurser tror du att lärare behöver för att effektivt använda AI inom utbildning?
13. Tror du att AI kan ändra lärarens roll i klassrummet?

Om så:

- a. Hur skulle rollen förändras?

i. Skulle detta vara en förändring du gillar eller inte?

1. Varför skulle du gilla/ogilla det?

Erfarenhet med AI:

- 14. Kan du dela med dig av ett specifikt tillfälle där AI hade en positiv eller negativ inverkan på din undervisning eller dina elevers lärande?
- 15. Hur har lärare behövt anpassa sig för att ta hänsyn till AI?
- 16. Hur har skolor behövt anpassa sig för att ta hänsyn till AI?
- 17. Har det uppstått några problem med att anpassa sig till AI?

Organisation:

- 18. Vad uppfattar du som de största hindren för att införa/använda AI inom utbildning inom din institution?
- 19. Vilka möjligheter tror du att AI-integration presenterar för din institution? (om några)
- 20. Vilka problem tror du att AI-integration presenterar för din institution? (om några)
- 21. Hur tror du att lärarstabens uppfattningar om AI påverkar integrationen i utbildningen?

Uppfattning hos andra i organisationen:

- 22. Hur skulle du beskriva den allmänna acceptansen och uppfattningen om AI bland lärarstaben i skolan?
- 23. Skiljer sig din uppfattning från den generella uppfattningen från lärare i skolan?
- 24. Hur skulle du beskriva skolans uppfattning om AI?
- 25. Hur tror du er skolas uppfattning ser ut kontra andra skolor?

Organisationsförändring generellt:

- 26. Vad är din generella syn på organisationsförändringar inom skolan?
- 27. Vad har du varit med om för stora förändringar inom skolsystemet innan? Reflektera över dem.
 - a. Vad tyckte du om dessa förändringar?
- 28. Hur tror du att din syn på organisationsförändring ser ut jämfört med andra lärare på skolan?

Öppen slutfråga:

- 29. Finns det något annat du skulle vilja dela med dig om dina uppfattningar om AI inom utbildning?
- 30. Finns det något annat du tycker är viktigt att prata om/nämna?

The student's project. As an integral part of the educational program at the Stockholm School of Economics, enrolled students complete an individual thesis. This work is sometimes based upon surveys and interviews connected to the subject. Participation is naturally entirely voluntary, and this text is intended to provide you with necessary information about that may concern your participation in the study or interview. You can at any time withdraw your consent and your data will thereafter be permanently erased.

No personal data will be published. The thesis written by the students will not contain any information that may identify you as participant to the survey or interview subject.

Your rights under GDPR. You are welcome to visit <https://www.hhs.se/en/about-us/data-protection/> in order read more and obtain information on your rights related to personal data.

Project title	Year and semester
Bachelor Thesis in Management	3rd Year, 2nd Semester
Aim of the study	
Understanding teachers' perception of AI in education	
Students responsible for the study or interview	
Rasmus Wessberg, Sebastian Ståhl	
Supervisors and department at SSE	Supervisor e-mail address
Filip Wijkström, Department of Management	filip.wijkstrom@hhs.se
Type of personal data about you to be processed	
We will process names, age, years of teaching, subjects taught, opinions, perception.	

Signature	Place and date
Name	

Appendix F: Use of AI

AI has been used to aid certain parts of the study. It has for instance been used to generate useful ideas for the research and analysis of the study mainly through Chat-GPT which has also helped refine and revise text, KlangAI to transcribing interview recordings and DeepL to translate the transcripts to ensure optimal accuracy.

Appendix G: Further Supporting Quotes

Themes	Quotes
Relational Leader	<i>"[If AI will change the teachers' role] No, not the role really. (...) It can't replace it (...). Rather, it will still be the teacher who sort of supervises and holds everything together and assesses. (...) Because I still believe that there is a lot to do with relationships and role modelling. And I think that the human factor is important for learning." - T4</i> <i>"I may not be the educator anymore, instead I may be more of a mentor. (..) [Is this something you fear?] A fear? No, I still believe I have no problem because I know that the school is a comfort for many who come here. So it is a safe place." - T3</i> <i>"Well, you could say that we humans are social animals. We look for ways to be connected to each other. (..) We also have a biological need for that. (..) It's extremely complex emotionally (..). But there is a social need. And I think that school is also designed to fulfill a social need, to be fostered." - T9</i> <i>"[Can AI be a teacher?] No, I don't think it will be teachers. The pedagogy of human interaction is far too important. (...) [The teaching job is safe] Because it's deemed that human interaction and pedagogy is too important." And that cannot be replaced right now." - T12</i> <i>"I think this is something that Corona really showed us, when everyone was working from home, and you didn't have this personal relationship, you realized how important it is. I don't think an AI can take it away, or really change it that much." - T11</i> <i>"I don't have any such fears that it will change or worsen my relationship with my students. I don't think so. (...) The reason why I don't think so is because of this pandemic. That the students really longed to be in the classroom. And I think that part will probably never disappear. That you need this human relationship with your teacher and your students." - T2</i>

	<i>"No, I actually don't think so [If teaching role will change]. I think you still want to have some kind of personal relationship with." - T11</i> <i>"But I think students will still have a lot of faith in their teachers. Or that's what I see at the moment. It may be replaced over time, I don't know. I can't really see that. The personal relationship between student and teacher is difficult to replace." - T10</i> <i>"And I think it will become even more important [Relational role]. So it's pretty clear already today. It is by creating a relationship that you can set the level to now we can learn something because now it's safe in here so now we can work on what we need to work on." - T3</i> <i>"Yes, absolutely [Like AI taking administrative responsibility]. Because the goal is that all students should feel that I really got the time, the teacher had time to help me, not that you just rush 45 seconds per student." - T6</i> <i>"Yes for example that you can (..) be more present in the teaching with the students, have more time to sit with them in smaller groups and be able to (..) discuss. And I think you spend quite a lot of time on planning as it is, but there you could perhaps be more efficient and perhaps find even more sort of interesting, creative things for them to do. (..) Things that you think are kind of stimulating could be done instead." - T7</i> <i>"The fact that some monotonous, unnecessary tasks can be handled and that frees up time and energy. And then it feels like I as a teacher can do much more of what I want to do instead of maybe working on things that are just time-consuming and boring and that don't give the students much either. There's no one who thinks, you know, thanks you for doing this, oh now you sat for ten hours with this really boring task." - T7</i> <i>"It would definitely be affected [Teacher's role in the classroom], but I am probably very confident with the role of educator. Maybe I could even be a better teacher. I can focus more on teaching and student encounters than on the material around it." - T12</i>
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Nurturing Role	<i>"But maybe also become some kind of social supervisor, also more around the students and focus more on the foster care assignment. (...) I would probably like that personally. So there would be a shift from my main task being knowledge, knowledge provider, to becoming more of a, not educator, but social supervisor. (...) I find the social assignment quite fun now too, so I could probably still accept that."</i> - T5 <i>"Okay, I have an AI that can explain the basics here then. What should I add? Well, I can add the human factor, which I don't think AI can perhaps imitate. (...) This is explicitly one of the school's most important tasks. To nurture. And maybe we can't leave that to AI. (...) You have a social role that is enormous. You shape them. As a teacher, you raise children in a different way."</i> - T13 <i>"After all, school is very much about not just knowledge, but also fostering. And it's the development of social skills."</i> - T1 <i>"Then they can stay focused on the other developmental pieces. But I think that's one of the most important things that may not have been addressed. (...) But school at this level is so much fostering more than just learning."</i> - T2 <i>"But it is primarily that. I always think that my role is to prepare my students for university studies and for life in general. And so I want to give them the tools they will need, as well as the rules of the game."</i> - T10 <i>"You could say that this is exactly what I was talking about earlier, the need for teachers in relation to ChatGPT. (...) But it's kind of the idea that it can always be good to have a person there somewhere. Precisely because, now this is an upper-secondary school, but especially in relation to teaching and education, it is also somewhere an educational mission. We must teach students to be academic and to work in an academic way. But it is also a life experience. You learn to be a person in the same way. I continue to learn to be a person as a teacher. (...) No one is static like that (...) it's just a human experience. And it's part of the fact that you go to school, you talk to people, you experience things and then you feel things. So to just have, like, a worst-case scenario, just sitting at home and having a chatbot to teach you everything, no. That would be strange."</i> - T9
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	<i>"It's like I said. Okay, you're in school and you learn things and then you go out into the world somewhere. And then the question is, has the school prepared you well enough? And ultimately, we have an obligation as I see it. So I really see my main task is to give students the opportunity to discover new things. Expose them to thoughts, ideas and knowledge. (...) I see it as exposure. You should understand that these things exist." - T9</i>
Lost Control and Autonomy	<i>"You will be like a warehouse worker on Amazon instead. It will be fast-paced work. You actually get more to do. It will be more stressful. It's more controlled. For something that still characterizes the teaching profession. There is a great deal of professional freedom." - T1</i> <i>"There are those who have compared the teaching profession to the priest profession. Who say that teachers are alone with their congregation. Or with their class just as the priest is alone with his parish. You have a lot of freedom. You can create, you can do things in different ways. If you were to introduce AI, it would of course be severely restricted. I can see that as something that would have an impact. Absolutely. The profession and limiting individuality." - T1</i> <i>"Is it IT or people who decide? And when I read this in 2004-2005, I chuckled to myself. And thought that it was a stupid question. It's clear that humans are in charge. (...) But when this book came out just a few years ago and she was still writing, I thought. Yes, but now I understand what she meant. With AI. Now it's not obvious. (...) Then it will be the learning systems that control the teaching. Then the teachers will also become someone who explains how the systems work. Then knowledge will be defined by these systems. Then the teachers will have a different role and talk about what knowledge is about and not themselves. This brings us to the issue of Zubov. Then it is IT that decides. (...) This will make the teachers' role less personal. And will make teachers more like Amazon workers. (...) No, I would find it boring [Letting AI take more control of education. (...) I think it would lead to deprofessionalisation." - T1</i> <i>"So I think that the teacher in the future may in some way, to some extent, become some kind of administrator of AI and monitor and ensure that everything works.</i>

	<i>(...)Yes, if it were to be the case that we only learned to become some kind of administrator of AI, I wouldn't like that." - T5</i> <i>"Yes, because in 16 years, have received more aids? Yes. Have I gotten more to do? Yes. (...) The more technology we have, the more things we have to do. I've really gone from 24 students in a classroom to 31 students in a classroom." - T8</i> <i>"And I think being a teacher is really very individualistic. And I kind of want to grow my own garden, to quote Voltaire." - T4</i> <i>"I think that many, many teachers, are a bit afraid of this [AI] because they think that, well, now this will take over my job." - T2</i>
Questioned Power Position	<i>"Yes, say that there will be more of this we learn together then. (...)That it will be collective. Where it's not me who has the answers. Which then will be really hard. Because that's what I want to do (...) No, it's about letting go. (...) But I think there are some people who never would. Because you become much more equal." - T3</i> <i>"Depending on who you are as a person, if you feel insecure with this [AI], you feel that, now I'm going to show something, where the student is better than I am. So I think it can be a little, one of those little feelings too, that no, I'm not so sure about this so I want to take it easy with it." - T11</i> <i>"I'm probably not particularly concerned, but there are probably many colleagues who would find that a bit threatening and a bit difficult. There's this attitude that the teacher has to be the smartest in the class and then an artificial robot comes into a computer that in many ways seems smarter. That can make things a bit difficult." - T13</i> <i>"The first thoughts and feelings I have already had in some way and then it was tough and a feeling of losing control." - T4</i> <i>"I think that the teacher's authority may be questioned in some way. I mean, the whole internet revolution and the whole digital revolution have also questioned the teacher's authority. And now it might be another step, since AI can act as a kind of coach. (...) Yes, but that actually questions our entire profession in some way. So</i>

	<i>that dynamic can change. (...) Our status and authority may not be as clear as before." - T5</i> <i>"I would probably think it was sad that we don't have any more. Well, we're not a monopoly on knowledge now, but we do have some kind of authority. The teacher still has some kind of authority in that he/she has knowledge. It would probably be boring [AI affecting teaching]." - T8</i>
Operational Aid	<i>"But in some schools I have to make thirty-one adjustments. (...) Do I see AI as a tool for that? Absolutely." - T8</i> <i>"And then for teachers, as I said, you also have to get teaching materials in some way. Like this, come up with math numbers for me, or come up with, I'm going to have a lesson on this, what are we going to do, I'm going to have a lesson on this subject, get five study questions, for example. It's something again, for example, that it would somehow reduce the overall workload, you could say. Which is usually the point of technology." - T9</i> <i>"I also make the schedule and so on, that's a new thing. And there we have, among other things, an AI service that can add it, which partially automates it and so on." - T11</i>
Deepened Knowledge	<i>"So it should be done so that you can do more complicated things. Exactly. With the help of it, like a calculator." - T8</i> <i>"Seeking information is something that we will hand over to "it". And then society, individuals, all individuals will become a little less sharp at it. But we may also have the opportunity to learn more. We will know more things. We will find more things more easily accessible to us. We can look up questions that are probably quite difficult and get a very good start. In the same way that you look up Wikipedia to get a basic knowledge. You will be able to get a very specific answer to your question. And then you will kind of enter that question and then you get that knowledge. So in terms of knowledge, really, we'll probably be a little sharper. I'm speculating, but we will be able to do more. But the knowledge of searching for information and working with it will decrease." - T9</i>

Personal Benefit	<i>"Well, I have read what it can do. And I'm extremely fascinated by it. I see many ways that it can benefit me and I want to use it." - T8</i> <i>"I would definitely like to do that [Implement]. Because in religion, most, the best articles are in English. And I sometimes collaborate with the English teachers. That they get to learn the text there. And then discuss the religion. And such a tool would be fantastic." - T8</i>
Unwillingness to do What is not Understood	<i>"Of course we should learn this technology, this tool. It's a fantastic tool. But, if you don't know what to do, it doesn't matter how strong the tool is. And that's where we math teachers come in." - T8</i> <i>"I actually think it's the ignorance. That you simply don't know what it is, how it works and what to use it for." - T8</i> <i>"So I guess I tend to use the tools I'm very familiar and comfortable with. I probably pretty much stick to what I know." - T13</i>
Inability to See Perceived Opportunities	<i>"I think you will kind of move towards saying no, but you don't have to learn how to navigate as long as you know the maps." - T1</i> <i>"You'll be like a warehouse worker at Amazon instead. It will be tempo work. You actually get more to do. It will be more stressful. It becomes more controlled. For something that still characterizes the teaching profession. There is a great deal of professional freedom." - T1</i> <i>"I think we haven't had enough training in it, so that's why right now most of my colleagues are also negative about it because we just get these plagiarized things out of the blue." - T6</i> <i>"A big part of the teaching profession is that you close behind you in the classroom and are relatively free to do what you want, as long as you follow the absolute goals set by the Swedish National Agency for Education, the way there you have had creative freedom to create." - T12</i>

Well Planned Changes	<i>"It happens often [Change], and as long as there is a good thought behind it it is okay. (...) Of course, it is much, much easier to accept when you understand why. And what you don't understand you of course resist." - T8</i> <i>"We may not want to change things all the time. Especially when it comes to everyday life and work. All changes are hard but some can be confronted with a different motivation because you realise that the result will be good." - T10</i> <i>"So there is a motivation always. To use what I think is useful for my students. (...) It is a bit absurd not to try to use that opportunity [Implementing AI]. As long as it benefits the student." - T10</i> <i>"You want it to happen for a reason [Change] and for it to be communicated transparently. And that you should be involved in the process. Then I am positive. As long as there is a clear direction and that there has been an impact assessment. Of course, change needs to happen sometimes. But I think it's important to be transparent as far as possible." - T7</i>
Inevitability Leveraging	<i>"This is going to happen sooner or later. So I don't think being resistant to it will help." - T12</i> <i>"Now AI is here. It's not going to disappear. And I think that what we teachers would need is support. We need support to be good at this. We need support to be able to do our best to equip our students to maybe be good at using AI." - T2</i> <i>"I wonder if it isn't just like this, you have to accept that it exists. Well, yes. That's how it is. You have to accept that this is something that will probably remain." - T9</i> <i>"It's not something you can be against [AI]. Because we have it here. It is happening. That people have accepted that it exists. Yes, they have. And I think we are pretty much thinking like this. I wonder what we can make of it. Because we've already got the downside of it. We have to deal with it. Then we might as well make something good out of it? I think so. We can't stand like this. We don't care about AI. We already have it here. Can we get some benefit from it too?" - T3</i>

	<i>"So when it comes to organizational changes, it's a bit like this. You have to have a certain level of professionalism. You have to accept it. It's like, now you've decided that we're going to do it. Fine. (...) It is my job to try to interpret these documents in a way that I think provides good knowledge." - T9</i> <i>"Yes, but a bit like this, like there is a certain requirement that like, oh my God, we use cell phones. Like every day. There's no doubt about some things, so like a certain literacy, like about the use of our technological tools, I think it is really a civil service. So we should teach things about it. And then it depends to what extent or scope, I would say." - T9</i>
Hidden Motives	<i>"But I don't think the organisational changes are inevitable, but they happen after decisions or political will or whatever it may be." - T5</i> <i>"I think it can cause quite a lot of problems [Non-transparent communication from change management]. You've been through it yourself that there's an announcement when everything is ready and you haven't been able to follow the process and it hasn't been anchored." - T7</i> <i>"So organisational change is very much about how satisfied you are with the current organization. If you are satisfied with it. But then there's no reason for it to happen. That kind of change really. But technical change feels more like it needs to happen in order for us to keep up with developments. And it would be appreciated if it was really taken seriously. That you felt that there was competence at the school. That it was something that was prioritized. It's something you want to move in that direction." - T7</i> <i>"But then for example, to use more digital tools in math. There's no thought behind it, it's just something you, well, we do this, why? Well, we don't know. Everyone else does it, we do it too. There is no scientific evidence that students will improve. But we do it, why? Yes, we don't know." - T8</i> <i>"They disturb more than help [organisational changes] and then it's also unclear what the goal is, whether it's a goal that really benefits the school or is it economic interests, political interests, you know. I think that's really not good. No, it isn't. I think that we as professionals can manage a school on our own." - T10</i>

Habit Destruction	<i>"It is not a goal in itself really [Change]. And maybe it can create some uncertainty. Just in terms of if a school is going to go through an organisational change. Then you might feel a bit like. Well, but will it affect my position? Some may not be able to continue working. That it creates uncertainty." - T7</i> <i>"There are many people who are negative, that try to adhere to the old ways. And I would count myself there too. Sometimes I wish this wouldn't have happened [AI]. So it has affected us quite a lot." - T10</i> <i>"But how detailed should it be [Change]? How should you do this? It's usually an expectations vs. reality thing that happens. And then somewhere along the line, I'm told what to do. And of course, some teachers are bothered by this. Tell me what to do for God's sake. While others say, wonderful, I have a lot of freedom to do what I want to do. So I think it can definitely be one of those things. So it's always a question of how much control versus how much freedom." - T9</i> <i>"I say let us teachers work in peace. We're pretty self-driven, so to speak. So I'm usually not too keen on organizational changes, so to speak." - T10</i> <i>"I think they should leave us teachers to do our job. Organize ourselves. (...) I feel that both me and my colleagues take a lot of responsibility ourselves. Striving for efficiency. And I find that many times changes that are imposed from the outside are kind of clumsy." - T10</i> <i>"We humans are creatures of habit. That is, we do what we have learned at some point. And then, depending on how you are, you are more or perhaps less appealing to something." - T9</i> <i>"Maybe not much [if AI will change his teaching]. At least not in the short term. And it's probably just laziness. In that case, you might have to sit down and rethink every single course." - T13</i> <i>"I like using technology, but I think that there may be many people who, it's too much for many people to learn." - T11</i>
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	<i>"Many projects in the school world, you throw something up and then we have to work in a certain way and then it becomes like it was before either way. (...) Is there any greater difference in how we teach today than in ancient times, for example? (...) It is believed that in education in particular it has not changed." - T13</i> <i>"Sometimes it's good, sometimes it's bad [Change]. It depends a bit on what you do. I think a school has to change over time. I think that if you do the same thing all the time, you stagnate. (...) But it doesn't mean that you should change everything every two or three years." - T11</i>
Increased Workload	<i>"Now we will use this instead of this. Now you will do this instead of this. (...) This is actually also a trade union issue. It's really about workload in the end. (...) We have to make sure that our organization works in a way that makes everyone feel good. And teachers happen to be one of the most stressful jobs around. Because you are never done. You might have a project and then you have a deadline. A teacher has deadlines several times a week. If not at least one deadline per day. (...) And if you [Organisation] make major changes without having done a risk and impact analysis. It has a bad effect on the colleagues. That is, burnout increases. Stress levels increase. People are not as happy anymore. (...) You are dissatisfied with your job. Does not contribute to psychosocial health." - T9</i> <i>"Always, yes [Organisational change increases workload]. It is a change. You are going to use this computer system instead of this computer system. Well, everything was on this previous computer system. You'll have to fix it. We are transferring it. We'll transfer that (...) It's always about. In my career right now, it's always a question of someone telling you to do something new like this and then it takes time. And then, of course, it's up to the principal to make sure there's time for it. And like, well, now I have to spend time doing this. Then something from here must go away. I can't work 120%. What should I prioritize? (...) It's just a question of how much extra I have to work.(...) In the end, I just see it as a question of how much extra I need to work." - T9</i> <i>"It should, but it's like always when you make a change. You have to pitch it so that people see the benefits of it. That it doesn't just become another administrative burden or another tool to be mastered or used." - T13</i>