

# What are the Reciprocal Relationships Between Teachers' Use of Management Information Systems and Their Sense of Accountability?

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## Abstract

Over the last few decades, educational organizations around the world have been instructed to employ Management Information Systems (MIS) to ensure the profitability of their organizational and pedagogical processes. The existing body of research on MIS in education focuses on the systems' contribution to achieving organizational objectives and improving managerial practices. To date, research has given little attention to the multifaceted contexts of the integration of technology and the effects of MIS on teachers. This research took a critical approach, and suggested a linkage between MIS and the global neoliberal discourse, which seeks to implement norms of accountability in educational organizations. Taking place in an Israeli high school, interviews questioned teachers about their perspectives on Mashov, an Israeli-developed MIS. Findings revealed a gap between the expectations preceding the implementation of Mashov, and the complex reality thereafter. Teachers exhibited different and often contradictory opinions about Mashov's usability and its influence on their authenticity and sense of accountability. Conclusions have shown that a fruitful discussion about the socio-political changes in the Israeli education system underlies the use of MIS. While management staff embraced those changes, most teachers criticized the effects of disempowerment and de-professionalism brought upon them.

**Keywords:** Management Information Systems (MIS), neoliberalism, accountability, transparency, effectiveness.

## Introduction

Originating in the corporate world, MIS hold and provide vital information that is essential for an efficient and effective management of schools (Pits 1995; Selwood & Visscher 2007; Taylor 1997). Research on MIS occupies a relatively peripheral position in the study of Information and Communications Technologies in education. Studies that explore the effects of MIS use in schools present an imbalanced portrayal. While most studies celebrate the ways in which MIS enhance leadership, management and parental involvement (Blau and Hameiri 2010; Blau and Presser 2013; Selwood & Drenoyianni 1997), only a small number of studies focus on the detrimental consequences of MIS usage, mainly in regards to the disempowerment and de-professionalization of teachers (Tatnall & Davey 2005; Waring et al. 2011). Moreover, as Selwyn (2011) highlights, there exists a significant lack of critical research on the social, economic, cultural and political contexts that accompany and influence the implementation of MIS in education.

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## Purpose of Current Research

This research takes the Social Construction of Technology approach (SCOT) to suggest that technology is a manifestation of the social realm, and thus it bears different and sometimes contradicting interpretations by the various players of potential interest. Alongside the SCOT approach, the research is also backed by the political economy approach, which explores the intersection of political factors, economic systems and technology. In light of these two approaches, it is suggested that both the implementation and use of MIS in schools are associated with neoliberal policies that aim to transform schools into 'business-like' organizations that abide by principles of accountability, whereby teachers are held accountable for reporting their daily and periodical activities that can then be quantified and published.

The current research intends to broaden the critical discussion on MIS in education, while considering teachers' interpretations of the contexts that center on the implementation of MIS. In particular, two main research questions ask:

1. To what extent do teachers perceive MIS as 'accountability tools'?
2. Subsequently, how do teachers foil official expectations of how MIS should be used?

## Methods

### Participants

The research was conducted in one of Israel's top performing public high schools, located in a central urban area and one of the country's first to implement Mashov ("feedback" in Hebrew), a prominent Israeli MIS that has been in use since 2007. The research included responses from 17 teachers that represented 15% of the school's teaching staff. A purposive sampling strategy was used to select the participants from various disciplines, both humanities and sciences, focusing on the ones more likely to fully exploit the features of MIS, including homeroom teachers, subject coordinators and management personnel. The 17 participants were aged 26 to 54 with an average of 42.4; 59% were female, and their tenure ranged from 1 to 28 years, with an average of 11.6.

### Instruments and procedure

Semi-structured interviews were chosen in order to encourage participants to share their perspectives authentically (interview guide is detailed in appendix I), after they had signed voluntary consent forms. All interviews were conducted in a neutral setting outside of school premises, between April and May 2013. An average interview lasted 45 minutes and all were recorded using a personal digital recording device.

After transcribing all interviews, a thematic analysis strategy was used to analyze the text. First, deductive and inductive methods led the search for repetitions, analogies, similarities and differences in and between interviews. During this process, several codes were generated, such as, 'accountability', 'transparency', 'general perceptions of MIS' and more. Later, a thorough read of the coded text produced several themes, which were examined in their relevancy to the main research goals. Finally, two main themes were formed: (1) Mashov and accountability: a matter of interpretation; (2) Mashov and transparency: pressures and misrepresentations.

## Findings

### To what extent do teachers perceive MIS as 'accountability tools'?

The research found an array of interpretations about MIS and the discourse of accountability. Six teachers had stated they saw no correspondence between MIS and their sense of accountability. For them, MIS was a mere technical tool, intended to enhance their professional

performance with superior administrative functions. One homeroom teacher indicated that increased demands for accountability did not accompany the implementation of the system, as teachers had already been expected to exhibit a strong sense of accountability: "So with Mashov everything is more transparent, so what? It's not as if my work had not been monitored in the old days... part of being a professional teacher is reporting what I'm doing and how I'm doing it...".

In contrast, eleven teachers believed that the use of MIS had indeed promoted increased accountability. According to the school's principal, MIS are powerful and efficient tools that help teachers develop their sense of accountability: "As teachers, it's very easy to let certain things slide, but when you're working in a room with transparent walls you behave differently. Mashov demands you to be accountable for your actions. At first, you do things because you know that someone is watching you, but later, you internalize the supervision and it becomes built-in".

Three management personnel reported that the MIS-led transparency and demand for accountability influenced the practices of their subordinates in constructive ways. As one subject coordinator stated: "Mashov requires my teachers to be in control and know exactly what's happening with their students. They become more professional because they know that I'm monitoring them".

In contrast to those praising responses, six teachers stated that demands for accountability led them to engage in unnecessary and time consuming actions, as one homeroom teacher asserted: "I now do things because I know that they're (management) watching. Suppose that one of my students doesn't show up to school, I'd call the parents to make an inquiry and even if they don't answer I will still update this in the system, so that no one says that I had acted unprofessionally".

As the interviews proceeded, more teachers shared their critical perspectives on the discourse of accountability. Words such as 'evidence' and 'proof' were repeatedly mentioned by teachers when describing their engagement with MIS. Four teachers admitted that their main motivation for documenting and reporting student-related incidents in MIS was to protect themselves from criticism and allegations of unprofessionalism. Of those teachers, three focused on their accountability to management: "I write everything in Mashov, everything. This way, when the principal comes to me and asks: 'why didn't you talk to the parents and let them know that their child had missed school?' I can prove that I had done my job" [subject coordinator].

### **How do teachers foil official expectations of how MIS should be used?**

Teachers are expected to document all classroom activities in MIS, including students' marks, indicators of discipline and absence, conversations with students and parents, curriculum progress and more. This documentation becomes fully transparent to all stakeholders, whether management personnel, school advisors or students' parents.

A set of three words repeated frequently when interviewees shared their views on transparency: 'pressure', 'fear' and 'criticism'. Several of the junior teachers reported that the requirement for transparency when working with MIS, alongside an underlying fear of public criticism, had led them to develop a strong sense of pressure, translating to misrepresentation of data entered into MIS in two main dimensions.

The first dimension of misrepresentation appeared in performance-related inputs, as three teachers reported that the use of MIS intensified their pressures to deliver superior results. Thus,

in order to avoid criticism of inadequate performance, they often embellished their students' marks: "If a certain class has a high failure rate it's the teacher's fault. Before Mashov, I could have kept the records to myself, but today everything is transparent... I save myself the pain of being persecuted and thus give them (students) higher marks... they say that Mashov creates transparency, but actually it creates inauthenticity" [homeroom teacher].

The second dimension of misrepresentation concerns the disciplinary student-involved incidents that teachers are obligated to report in MIS. As two trainee teachers stated, part of their performance assessment was based on their ability to reduce the number of such disciplinary incidents, and the less reported, the higher their reported assessment was. Therefore, the fear of being labeled 'unfit' had led them to occasionally refrain from reporting disciplinary incidents through MIS. As one trainee teacher described: "At the beginning, I used the system to report every single disciplinary incident, but then it backfired. They (supervisors) said that I didn't know how to control my students... Today, I don't always report misbehaviors so that I'm not accused of being an unprofessional teacher".

## Discussion

This research investigated the reciprocal relationships between teachers' use of MIS and their sense of accountability. While most teachers found MIS and accountability to be interrelated, others perceived MIS as mere technical tools with no ideological agenda. The management team in this research referred to levels of effectiveness when discussing MIS-induced accountability: as teachers are trained to develop stronger commitment to their work at school, accountability minimizes the risk of unsatisfactory performance.

Most teachers were also fully aware of the link between MIS and accountability. However, while management personnel related to this link as means of enhanced efficiency and sense of empowerment, teachers were mostly preoccupied with the disempowering effects that MIS had on their professional identities and practices. As reported by several teachers, the transparency component of MIS and the pressure to account for students' performance have led to a state of 'panoptic performativity', described by Perryman (2006) as "an inspection regime in that teachers... feel as if they are constantly being observed, and perform accordingly in order to escape the regime" (p.155). While management expectations concerning ongoing documentations in MIS were clear, several junior teachers found them overbearing. They felt that the transparency element of MIS added to the pressure of exhibiting higher levels of performance. Feelings of inadequacy had led a few teachers to enter misrepresented data in MIS by manipulating student-related data. The findings present the transparency of MIS as a double-edged sword: designed to ensure production and collection of credible data on the one hand, yet pressurizing teachers to produce ideal representations of their work on the other.

While teachers represent the vast majority of the MIS user base, their voice is rarely heard in research projects on MIS in education. Therefore, the aim of this research was to explore and acknowledge the teachers' perspectives. By using the case study methodology to accomplish the goals and objectives of this research, it can prove challenging to generalize the conclusions and apply them in other contexts outside the studied school. Nevertheless, this research asserts that readers can learn from this study and achieve naturalistic generalization, by which they will connect to the findings they most identify with.

## Conclusions

In this study, the researcher was most concerned with the small number of studies that focus on the detrimental consequences of MIS usage. The investigation of MIS and teachers' reactions showed that it does have a severe impact on teachers' practice. Perryman's notion of "inspection regime" seems particularly appropriate.

Nevertheless, technology is not to blame. As we have seen, the SCOT approach accurately determines that technology is a social construct, and thus bares occasional contradictory interpretations by players of potential interest. MIS is simply a representation of some of the dominant discourses of both the Israeli society in general and the school in particular. Similarly to other education systems throughout the world, the Israeli education system has gone through considerable changes in recent decades. Those changes can be mostly associated with global neoliberal values, seeking to revolutionize and improve public services. Nevertheless, it is imperative to be mindful of the 'goodness of fit' between those values and the true nature of the teaching profession. While schools must adapt to the outside world, they must also balance their desire for performance with their commitment to nurture moral values.

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**Appendix I: Interview Guide**

1. Please provide background information about your professional experience and your current position at the school?
2. How long have you been using MASHOV? What are your main purposes for using the system?
3. What are your main goals in your current professional career?
  - Which of those are fulfilled or at least supported by the use of MASHOV?
  - Which are not supported at all by your use of the system?
4. How do these words reflect in your daily work with the system?
5. In regards to the previous question, in what ways do you think the system promotes transparency? Who has access to the data that you provide and what are your thoughts about this transparency aspect of the system?
6. In what ways do you think the system promotes supervision? What are your thoughts about this aspect of supervision in the system?
7. To what extent do you think MASHOV was designed for purposes of inspection and supervision of your work and progress? What are your thoughts about it?
8. To what extent does MASHOV influence your commitment to your students' performance?
9. To what extent does MASHOV shape and influence your professional behaviors?
10. To what extent do you think MASHOV supports the entire organization's goals?
11. In what ways does the management's assessment of your performance rely on your use of MASHOV? Is it happening only in specific areas of your work or across all capacities? Why do you think that is happening?
12. What are some of the dangers or risks that the use of MASHOV entails, either directly or indirectly (to your work)?