Teachers making sense of result-oriented teams: a cognitive anthropological approach to educational change

Abstract

Studies on educational change efforts abound but generally limit themselves to post hoc explanations of failure and success. Such explanations are rarely turned into attempts at providing models for predicting change outcomes. The present study tries to develop such a model based on the teachers' impact analysis of a management-driven intervention, introducing New Public Management principles at a Dutch school for vocational education and training. The study uses a mixed method approach, the quantitative part of which encompasses the accomplishment of a cultural domain analysis. It appears that in this case the New Public Management ideology of result-oriented teacher teams contradicts substantial aspects of the existing teachers' meaning system, and fails to meet not yet satisfied needs within the current meaning system. As a consequence, the relevance of a substantial number of the cognitions that constitute result-oriented teacher teams appears to be limited. The authors discuss the consequences for the chance to successfully change the teachers' meaning system and draw conclusions that suggest a set of more general building bricks for assessing change policy plans and practices in educational settings.

Keywords

New public management; cognitions; cognitive anthropology; educational change; meaning system; relevance; result-oriented teams; school culture

Abbreviations

ROTT: Result-Oriented Teacher Team

Introduction

Educational change is a complex process (Fullan, 1991, 1993) in which teachers are often confronted with a cascade of initiatives. New changes are often announced before the

previous ones are hardly implemented let alone made sustainable (McLaughlin & Mitra, 2001). National educational systems in many countries are often confronted with such change initiatives from the government, often 'supported' by the latest findings by educational scientists (Fullan, 1991; Hargreaves & Goodson, 2006; Leithwood, Jantzi, & Mascall, 2002). Examples in the Netherlands are the introduction of the so-called 'study house' and 'the new learning' in secondary education, both of which have been evaluated by the Dutch Parliament (Onderwijsvernieuwingen, 2008). These kinds of educational changes can hardly be considered successful, if only because they are seldom thoroughly implemented and scaled up beyond the phase of pilot projects. As a result, few changes reach the institutionalisation stage and become accepted as part of teachers' practice (Hargreaves & Goodson, 2006). Research on determinants of successful educational change (Dalin, 1998) suggests that strong transformational leadership and teacher orientation are decisive factors (Blase & Blase, 1999; Leithwood, Tomlinson, & Genge, 1996; van den Berg, Sleegers, Geijsel, & Vandenberghe, 2000). Research on these determinants focuses on the implementation of change in the daily practice of teachers and emphasise the importance of teachers' involvement and of stimulating their deep learning. Yet these findings do not produce knowledge that helps to predict the chance of success of a change initiative. We also know very little about the effect of instruments designed to measure organisations' readiness for change (Weiner, Amick, & Lee, 2008).

Context

The current study reflects on a particular intervention plan at a school for vocational education and training in the Netherlands. The intervention is one in the wave of the so-called New Public Management initiatives (Hood, 1991; Paulsen, 2005; Veenswijk, 2005). Schools in the Netherlands are confronted with an ideology of explicit standards and measures of performance, greater emphasis on output controls, and disaggregation of units into more or less independent teams (Gunter & Fitzgerald, 2013). The general aims are to

modernise the organisation and to create more efficiency, while maintaining and possibly even enhancing educational results.

The planned intervention in this school concerns the introduction of Result-Oriented Teacher Teams (ROTTs), an ideology that is deeply inspired by New Public Management thinking. The general idea of these ROTTs is that all teachers work in self-steering teams, oriented to the best possible results. The general school manager and a small support staff have already elaborated on the ROTT-concept, but the teachers have not been exposed to the ideology as such, and have no knowledge of its implementation in the future. Although teachers have already worked in teams for almost a year, their joint team efforts until now have been oriented to enhancing the quality of educational processes rather than to defining targets and managing educational results. Moreover, individual team members are primarily focused on the subject they teach, rather than concerning themselves with team results. Therefore, it is clear from the start that the projected change towards ROTTs will require a substantial cognitive reframing for the teachers.

In general, managerially planned changes bear the risk of not carefully taking into account that behavioural change is not simply adopting new working practices. Teachers are committed to sensemaking within their context of work (Weick, 1995) and "realize their reality by 'reading into' their situation patterns of significant meaning" (Morgan, Frost, & Pondy, 1983, p. 24). So, it is not surprising that the planned implementation of result-oriented teams has been criticised for a number of reasons, one of them being that "it places leaders within educational institutions in an almost impossible position, caught between leadership inspired imagines of behavioural change and the simple need to implement reforms that have been centrally determined" (Hall, 2013, p. 270). Either way, this type of change plan implicitly denies possible initiatives of teachers to enhance the quality of the educational process themselves. Other reasons for critique are that a further reduction of teacher autonomy and a substantial increase in teachers' workload can be expected (Troman & Woods, 2001). This results in resistance by the teachers and consequently an implementation that is likely to be unsuccessful (Thomson, 2008).

The present study takes as a starting point that it is worth deeper examining differences between ROTT and teachers' daily work practice, if only to avoid costly mistakes and to increase the chance of success. It confronts the ROTT ideology and its corresponding cognitions, as elaborated by the general manager and his supporting staff, with the teachers' current meaning system, using ideas, methods and techniques from cognitive anthropology. In doing so, we explore the possibilities to predict which elements of the ideology are relevant and thus likely to be successfully merged with the prevailing meaning system of the teachers, and which elements lack this relevance.

Cognitive anthropology

Cognitive anthropology (D'Andrade, 1995; Sperber, 1996; Sperber & Hirschfeld, 2004) offers a helpful framework of concepts in which change is considered as a process of diffusion of cognitions or representations within a group of people that share a common environment (Sperber, 1996). In addition to this concept of diffusion, Swidler's (1986) approach to culture helps to explain the interplay between ideology, environmental change, and strategies of action. In her approach, culture is understood as the meaning system of a knowledgeable group, profession or organisation as it is shaped and patterned in specific contexts. This conception of culture could also be described as 'situated cognition' (Spillane, Brian, & Reimer, 2002; Thomas, Sargent, & Hardy, 2011; Valsiner & Van der Veer, 2000).

Bate (1994) indicates that organisational cultures are mostly considered to be conservative entities that are hardly capable of changing themselves. He refers to Schön's notion of 'dynamic conservatism' (Schön, 1973). Schön describes dynamic conservatism as follows: "development processes of cultures (...) have a circularity to them which reproduces infinite permutations of the old, while producing little that is new" (p. 90). In other words, cultural cognitions are both 'models for' and 'models of' behaviour (Geertz, 1973), which means that by enabling as well as restricting individuals' or groups' choices, they clearly affect the likelihood of change efforts to become successful. The current study aims to contribute to the organisational change debate by analysing the process in which existing

and newly introduced cognitions interact in a specific change context. In the next section the framework of analysis is further developed.

Towards an analytical framework of culture change

In Weick's (2001) view, cognitive maps are schemata or patterns of thought that individuals tie together to make sense of the surrounding environment. At the group or organisational level, these cognitive maps of individuals are coupled in order to represent shared meaning systems. Weick's approach to the organisational meaning system and the central role of cognitive maps or cognitions is closely related to the central theorem of cognitive anthropology developed by Sperber. In *Explaining Culture, A Naturalistic Approach* (1996), he advocates an anthropology enriched with elements from cognitive psychology that helps to explain the causes and effects of change of cultural representations as a process of diffusion. Here Sperber makes a distinction between public and mental representations. Artefacts within the shared environment are public representations, whereas knowledge, beliefs, intentions and preferences are mental representations. In his naturalistic approach both types of representation are considered to have material aspects. Public representations obviously have a material aspect because they can be perceived by the senses. Sperber calls mental representations "(…) brain states described in functional terms, and it is the material interaction between brains, organisms and environment which explains the distribution of these representations" (p. 26).

Sharing an environment, together with a form of concerted action, generally leads to a certain degree of coherence between the cognitions and the behaviour of individuals within a group. To understand this, Swidler's approach to culture is helpful. According to her, culture does not act as a unified meaning system that consistently pushes action in a specific direction. Culture is rather a 'tool kit' or repertoire of meanings from which actors select different pieces – or building-bricks – for constructing lines of action (Swidler, 1986). Without overt change efforts coming from outside the culture, coherence tends to increase; shared behaviour and cognitions become ingrained and 'rusted'. This is what she calls the stabilising

quality of cultural representations. Thus, in a stable context, culture creates continuities in the organisation of strategies of action (p. 282; see also Figure 1).

Such relatively stable cultural settings can be affected by a new ideology. In Swidler's view, an ideology can be seen as "a highly articulated, self-conscious belief and ritual system, aspiring to offer a unified answer to problems of social action" (p. 279). Consequently, the introduction of a specific ideology may be thought of as a phase in the process of cultural meaning-making. Ideologies affect cognitions of people by shaping their action strategies. The more an ideology appears to be meaningful for a group of people, the more it will succeed in becoming the dominant source of cognition. In Sperber's (1996) terms we can speak of an ideology that becomes 'relevant' to the receiving actors. He maintains that a change of cognitions should be analysed as the diffusion of cultural representations, because, to him, the question why some representations happen to be contagious while others are not is basically an epidemiological one. Sperber refers to the process whereby new representations only achieve relevance if they reinforce existing cognitions or satisfy needs in certain cognitive sub-domains of a meaning system.

The theoretical considerations presented above are used to assess the degree to which a group of people, in this study the teachers of a Dutch school of vocational education and training, is ready to adopt the new (ROTT) ideology. Moreover, this view also allows the development of an implementation strategy for the change effort, in line with the different levels of relevance the ROTT cognitions show. Figure 1 schematically depicts the diffusion process of cognitions.

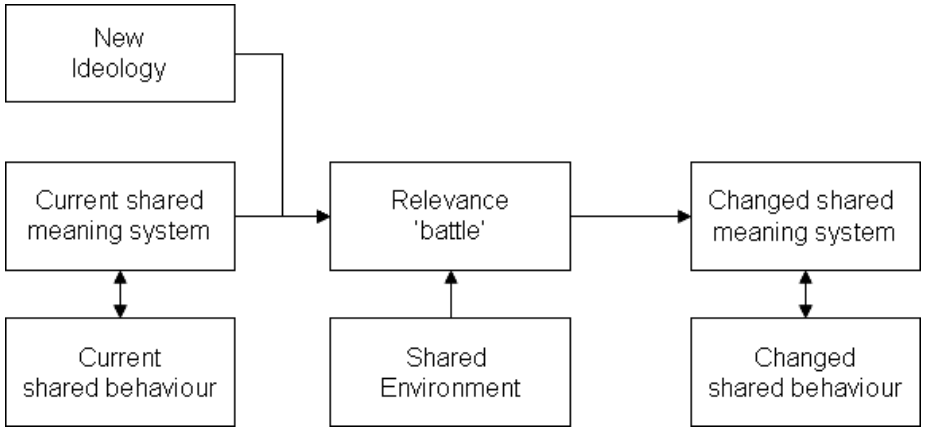

Figure 1 Diffusion process of cognitions

Both Swidler and Sperber use the term ‘shared environment’ to indicate the physical and visible context of a group of people. Both consider this context important for determining whether the group members experience obstacles in using the action strategies pertaining to the current meaning system. If this is the case, it is likely that a mismatch will arise between people’s shared behaviour and this shared environment, resulting in a decline of the relevance of the meaning system and an improvement in the conditions for learning (change). In such a situation, a new rivalling ideology has a chance of winning the ‘relevance battle’ with the current meaning system, ‘infecting’ it with new representations, new action strategies, and new shared behaviour.

In this study, we look at how the shared meaning system and the rivalling change ideology and its corresponding representations struggle for cognitive relevance, without systematically exploring the shared environment. We focus on the role our understanding of cognitions of the new ideology and the current meaning system takes in predicting the acceptance of the new ideology. This does not mean that cognitions constituting the new ideology, together with the current shared cognitions, are considered as the single factor determining the course of change. All change processes consist of a complex mix of policies, practices, cognitions, emotions, etc. (Spillane, et al., 2002).

Although our approach assumes that prevailing shared meaning systems and new change ideologies emerge from different cultural premises, similarities and continuity can also be expected between the shared meaning system and the change ideology, especially in situations where changes are designed and formulated by people acting in the same shared environment. Nevertheless, new ideologies always mean to change certain behaviours and cognitions based upon the shared meaning system, or introduce new ones. The shared cognitions of prevailing meaning systems and the corresponding behaviour can be relatively immune to new ideological ‘contamination’. We intend with our approach to demonstrate – and to some extent predict – the possible effects of cognitive (cultural) change efforts.

Problem statement

In this study, the relationship between the three elements of the cultural cognitive framework – 'current shared meaning system', 'level of relevance', and 'new ideology' – have been investigated by applying a methodology stemming from cognitive anthropology. The central question is whether the confrontation between prevailing shared cognitions and the new ideology could produce the required level of relevance for the change ideology to take root. The ROTT case presented here was still in its planning phase, as a consequence of which the actual 'confrontation' between the current meaning system and the new ideology became the heart of the study. The outcomes of this study could consequently benefit the implementation phase of the ROTT study. However, due to the possibility of a consultancy bias, it was decided that an advisory or intervening role was not appropriate.

The research question for this study is: to what extent is the ROTT ideology considered relevant by the teachers involved? Three related sub-questions are dealt with separately in order to address the main question on (cultural) change:

- Which cognitions can be distinguished in the ROTT ideology?
- Which cognitions are central to the teachers' meaning system?
- Which elements of the ROTT ideology are relevant and which elements lack relevance?

Method

To avoid potential weaknesses inherent in single method approaches (Greene & Hall, 2010; Robson, 2002; Tashakkori & Teddlie, 2010), this study, which was carried out by the first author of this paper, used a mixed methods approach. Johnson et al. (2007) define the mixed methods approach as follows: "Mixed methods research is the type of research in which a researcher (…) combines elements of qualitative and quantitative research approaches (…) for the purposes of breadth and depth of understanding (…)" (p. 123). We applied this approach for both the construction of the ROTT ideology and the analysis of the

shared meaning system of the group of teachers who were intended to become involved in the ROTT approach.

Participants

The researcher recruited the participants for this study from a Dutch school for vocational education and training offering educational programmes in the agricultural sector. The general manager, together with a small supporting human resources (HR) staff and an internal educational specialist, had started planning the implementation of ROTT a year before the start of this study, but result-oriented practices had not yet been implemented in the teacher teams. The general manager, the HR manager, and the internal educational specialist were assigned to be the key persons for eliciting and embodying the core concepts of the ROTT ideology.

For the quantitative analysis of the current meaning system, 88 teachers were asked to participate; 64 (72.7%) of them actually did so. Forty-two per cent of them were women. The years of teacher experience varied across the group, as shown in Table 1.

Table 1 Participants teacher experience

Years	Number
0-4	11
5-9	19
10-14	12
15-19	4
20-24	2
25-29	6
30-34	6
35-39	4

The participating teachers were organised into eight teams. Each team was responsible for a comprehensive set of course programmes. Twenty-five per cent of the participants were responsible for general courses, such as languages or math, 64.1% for programme-specific courses such as ‘livestock farming’ or ‘plant breeding’. The remaining 10.9% of the participating teachers had different, more specialised tasks.

For the quantitative analysis of the current meaning system, the researcher took a purposive sample (Robson, 2002) of five teachers from among the 64 teachers who

participated in the quantitative analysis. The five participants were selected based on the cultural competence coefficient (Collins & Dressler, 2008; Romney, Weller, & Batchelder, 1986) and their correspondence to the teacher's meaning system. The five participants were divided in two groups based on how well they matched with the meaning system, resulting in three participants in the higher matching group and two participants in the lower matching group.

Procedures and techniques

The elicitation of the ROTT ideology consisted of two steps. In the first step three members of the general management and supporting staff of the school were interviewed, as they had planned the change initiative and were the interlocutors of the change ideology. The interviews were semi-structured, aimed to identify the core concept of ROTT and recorded verbatim. In each interview the starting question was: "What do you mean by result-oriented teacher teams?" Subsequently, the underlying concepts and terms, such as 'results', 'result orientation', 'team', and 'teacher teams' were meticulously discussed with the participants. Next, the researcher carried out an open coding analysis (Robson, 2002) in order to bring the underlying terms (items) of the ROTT ideology to the surface. At first, there were 69 items.

The second step, jointly taken with these three key informants, consisted of an analysis of their opinions in order to elicit the central cognitive terms and categories of the ROTT ideology. The participants were asked to perform a pile sort technique on the 69 items found (Weller & Romney, 1988). The items were put on small cards, and subsequently shuffled and randomised before giving them to the participants. Each participant was asked to sort all the cards into piles in such a way that similar items were put together in single piles. They were allowed to make as many piles as needed. The choice for the sorting criteria was left to the participants as well. During this task, they were asked to think aloud about their choices. After having finished the piles, the participants were asked to define a label for each pile that described the cards of that pile as accurately as possible. Each of the sessions was again recorded verbatim. Afterwards, the researcher analysed and clustered these labels. This

clustering was needed not only to perform a confrontation of cognitions of the ROTT ideology and the teachers' shared cognitions, but also to be able to establish the level of coherence. The items that appeared at least twice within these categories were considered to be part of the ROTT ideology. The number of items left was 60. The remaining nine items were removed from further analyses because they only reflected one particular cognition.

For the quantitative part of the analysis of the current meaning system, the ROTT categories were converted to questions for a questionnaire. In doing so, the analysis of the current meaning system could be focused on those elements that would be affected by the ROTT ideology. The questions marked the cognitive domain without using notions and terms that are connected to ROTT, preventing the teachers from formulating their own interpretation of ROTT. The questions were open and free listing (Balieiro, Santos, Santos, & Dressler, 2011). For each question, respondents could give three to ten answers (in one case with a minimum of just one), in the form of a key word or short description. The key words and short descriptions were analysed for each question using the pile sort technique. Ideally, the participants themselves would perform this pile sort, but this approach appeared to be unrealistic given the number of participants and their limited motivation to perform such a complex and time-consuming operation. Thus, the researcher himself performed the pile sort. This pile sort operation resulted in a set of items that were analysed using the Cultural Domain Analysis approach (Bernard, 2006) in order to decide which could be considered to belong to the set of shared cognitions. This approach elicits the concepts individuals use to describe their organised sphere of knowledge – the cultural domain – and consequently, helps to uncover the salient dimensions of meaning individuals use to distinguish similarities and differences among these cognitions (Collins & Dressler, 2008). The set of items was analysed using the informal analysis model of the Cultural Consensus Theory (Romney, et al., 1986), which Atran et al. (2005) call "an effective tool for uncovering both shared and unshared knowledge" (p. 753). According to Weller and Romney (1988) "A central assumption of the consensus model is that the correspondence between any two informants is a function of the extent to which each has knowledge of the culturally correct answers" (p.

75). In order to infer the culturally 'correct' answers, the dataset of items was transposed by exchanging variables (participants) and aggregated answers (items). Subsequently, an item was scored '1' (true) if it contained the corresponding aggregated answer and scored '0' (false) if it had not. This was done for each participant in order to analyse the items statistically. The level of sharing was determined by performing a reliability analysis using the Pearson correlation coefficient, followed by a factor analysis. The analyses were carried out using SPSS, version 21. In accordance with Weller and Baer (2002), the participants were considered to have the same meaning system if the first Eigenvalue in a principal components analysis was substantially greater than the second. The items scored as 'true' were considered to form the cognitions of this meaning system.

The qualitative part of the analysis of the current meaning system consisted of in-depth interviews with five teachers, again recorded verbatim. Each interview consisted of two parts. In the first part the participant was asked to elaborate on the meaning of the items of the current meaning system. In the second part the participant was asked to comment on items of the ROTT ideology, without naming the idea of ROTT as such. While interviewing, the researcher gave special attention to the need the teachers have to solve the problems they encounter while doing their work. This focus was based on the rule given by Sperber (1996) that new representations achieve relevance to the extent that they meet not yet satisfied needs in certain cognitive sub-domains of a current meaning system.

After the data collection had been finished, the researcher compared the meaning system with the ROTT ideology. Firstly, the aim was to establish the elements of the ROTT ideology that reinforce the current meaning system, and secondly, to establish the contradicting elements of the ROTT ideology that may or may not satisfy teachers' needs.

The next section presents the outcomes of the study. First the ideology of ROTTs is described, followed by the results of the consensus analysis on the teachers' meaning system. The following paragraph describes the confrontation of ROTT ideology and the teachers' meaning system. The section ends with a paragraph describing the relevance of the ROTT ideology.

Results

ROTT ideology

Table 2 depicts the notions of the ROTT ideology as elaborated by the general manager and his supporting staff: the 60 terms defining the ROTT ideology. The five main categories of the ideology are based on how participants identified the piles. The description below is the researchers' summarising interpretation of the ideology as developed in this particular context, based on the verbatim-recorded interviews.

Table 2 ROTT Ideology

1 Leadership focus	*4 Result-oriented education*
Sustainability as an educational issue	Attractive education
External visibility of the school	Integrated learning arrangements
Social responsibility	Pay attention to student differences
Relevance for the region	School minors
A better school than the average	Connection with pre-VET and University
Sustainable building	External relevance of the diploma
External network	Usage of modern educational technology
High satisfaction of society	Entrepreneurial
Reacting to external changes	Preparatory instructional phase
2 Team characteristics	*5 Management and management information*
Agreements between teams	Granting discharge on basis of results
Sense of team belonging	Being in control
Free tasks model	Year plans
Budget responsibility	Management information
Interaction between teams	Monitoring of team performance
Negotiation within teams	Holding accountable
Acceptance of team choices	Justifying
Team freedom	Ownership
Sharing of student progress info	Data registration for reporting
Differences in professional practice building	High satisfaction of trade and industry
Making alternative planning scenarios	High satisfaction of employees
Team self-evaluation	High satisfaction of parents
	High satisfaction of students
3 Teacher skills	Branding
Professionalism	Leverage on educational results
Collaboration	Team plans
Capability for self-reflection	
Passion for education	
Intrinsic motivation	
Self-steering	
Exemplary behaviour	
Feeling responsible	
Result awareness	
Environment awareness	
To need each other	

Holding each other accountable
Communicative skills
Alignment of behaviour to the school brand
Leverage on educational results
Team plans

The ROTT concept was primarily aimed at enhancing the performance of the school in the view of external stakeholders, which is reflected in the items of category 1: ‘Leadership focus’. Logically the ROTT ideology contained a set of ‘Team characteristics’ suitable for achieving higher ‘Leadership focus’. ‘Teacher skills’, ‘Result-oriented education’, and ‘Management and management information’ were all seen as categories promoting a high level of result orientation within the teams. In this respect the ROTT concept was an all-inclusive ideology targeting the kernel of the institution’s educational programme.

The general manager stated:

“Look, we start with the basic, or lesser element: the students should be able to learn comfortably and easily. The organisation should be organised smoothly so as to prevent students being stuck in unsupportive procedures. They should be able to study efficiently. That is the lesser element. The larger element concerns aspects that are relevant for financers, society and other external stakeholders.”

The ‘Leadership focus’ category describes the larger element that should be the result of proper leadership by the general manager and the supporting staff. External stakeholders should gain a positive image of the school, resulting in a growing inflow and a higher outflow of students towards jobs in companies and other organisations, or towards other institutions of higher education. The most important result would be to have above-average test outcomes of students. Three other elements came to the fore here. Firstly, the school should be sustainable, in terms of buildings, energy consumption, and attention to sustainable issues in the educational programmes. Secondly, the school should be clearly and externally recognisable, presenting itself in all kinds of events. Thirdly, the students should show awareness of the agricultural situation in developing countries and make their knowledge available to – for instance – farmers in these countries.

The teacher teams were seen as the most important organisational unit in achieving these ambitious goals. Category 2 ‘Team characteristics’ therefore contains the principal aspects that enable the teams to do so. The teams were to obtain budget responsibility, so that they could be given control over the budget and prioritise activities considered important to reach their goals. It also meant that the team members should not be hampered by formal task division, school-wide planning scenarios, or the design of professional practice building. The teachers should be free to negotiate about the tasks to be performed by the teams, the priority of improvement plans, and the design of the educational programmes. There should be interaction between teams as well, as far as necessary for agreeing on shared resources. A good team atmosphere was seen as important too. Team members should get a sense of belonging to the team and needed to feel a joint responsibility for team results. They should always accept team choices and actively engage in team evaluation activities.

Apart from the typical team characteristics described above, teachers themselves should have a number of other competencies needed to perform their own duties in line with team results. This is reflected in the third category, ‘Teacher skills’. Good teachers are committed and inspiring. They accept that all their efforts should contribute to the team results, and make their own goals secondary to this broader ideal. They realise that team members need each other to achieve results. Self-reflection is seen as a major skill for teachers in order to accept that personal performance is no guarantee for shared vision and team success.

The ROTT ideology also has consequences for the educational programme design, indicated under category 4: ‘Result-oriented education’. In order to gain above-average results, the educational programmes should be attractive, which means that educational design and materials pay attention to differences in student abilities and interests. Starting school minors focused on labour market niches should enhance the external relevance of a programme. Students interested in continuing their education at a higher level should get additional courses preparing them for a smooth switch. The use of modern educational technology should be promoted and integrated learning arrangements should enhance the

applicability of the learned competencies for future jobs. In all programmes teachers should take care of the growing demand for entrepreneurship in the labour market.

In all school segments – teams, management and support staff – the availability of information should be enhanced. This is reflected in the final category 5: 'Management and management information'. The teams should be in control, hold ownership of educational processes and exert leverage on educational results, as a condition of which they perceive the need to receive all relevant information. A multi-annual and an annual year plan should be made for all projects and activities, describing explicit goals, priorities, and budgets. During the school season the progress of the projects, activities, and the team performance as a whole should be monitored. All monitoring information should be readily available.

School management, supported by a support staff, should be able to hold the teams accountable by monitoring team performance and formulating targets – high satisfaction of both external and internal stakeholders – at the school and team level. As such, all items named in this category should support the result orientation of the teacher teams.

Teachers' meaning system

To enable a 'relevance check' of the ROTT ideology, the teacher meaning system was studied in the following way. First, five semi-open questions were constructed, directly derived from the five categories depicted in Table 2. These questions together focused on the current teachers' meaning system within the ROTT domain without referring to the elaboration of the ROTT ideology as described above, thus leaving room for informants to formulate their own views on the current educational practice. Table 3 depicts the questions, and the corresponding categories from the previous phase.

Table 3 Questions for the analysis of the teacher meaning system

1	Leadership focus	What should general management and supporting staff contribute to the realisation of team results?
2	Team characteristics	What makes your team a team that realises good results?
3	Teacher skills	What are in your opinion the most important teacher skills that are needed to realise the team results?

4	Result-oriented education	What should the education given by your team look like in order to realise the best results?
5	Management and management information	In order to realise team results there should be some sort of guidance. In order to provide good guidance information is needed. What information does your team need in order to realise the results agreed upon?

The 64 respondents to the questionnaire gave 1,235 answers (on average 247 answers per question, 19.3 answers per participant, 3.9 answers per question per participant) in the form of key words or short indicative articulations. The phrases could be aggregated into 98 items.

Next, to conclude about the content of these cultural cognitions, answers mentioned by 20% or more of the participants were considered as part of the teachers' shared meaning system. The then remaining 23 items were considered to represent the cognitive schemata of the teachers' meaning system.

Consensus analysis (Weller & Romney, 1988) was used to obtain the level of agreement between the teachers on the remaining 23 items. The square root of the average Pearson inter-item correlations provided a computed level of consensus (Weller & Baer, 2002).

Table 4 Consensus for the five cultural categories

	Category	*Pearson square root average*
1	Leadership focus	∞
2	Team characteristics	.25
3	Teacher skills	.41
4	Result-oriented education	.48
5	Management and management information	.31

The factor analysis resulted in an Eigenvalue of 8.383 for the first component and 3.037 for the second, resulting in a ratio of 2.8:1. This ratio was considered sufficient to maintain that the participants formed a cultural group with a shared meaning system on the basis of the 23 cognitive schemata.

Yet, as can be seen in Table 4, category 1: 'Leadership focus' had a negative average Pearson correlation of -.01 (resulting in an undefined square root), meaning that there was no consensus at all among the teachers on the items in this category. As a result this category could not be considered as somehow being part of the teachers' meaning system and – together with its four underlying items – was left out in the remaining analyses. Nevertheless, in a later paragraph about the relevance of the ROTT ideology this finding will be discussed, as this complete lack of representation in the teachers' meaning system has important implications for the relevance of the themes related to this category.

As the other four categories showed a sufficient level of internal consistency the corresponding items can be considered as 'true' answers (Weller & Baer, 2002). The teacher's meaning system can thus be built upon four out of five of the categories – with 19 remaining items of schemata – present in the ROTT ideology (Table 5).

Table 5 Items of the teachers' meaning system, per category

Category	*Item*
Team characteristics	Subject matter expertise
	Good collaboration
	Good fellowship
	Good organisation
	Commitment/high stake
	Good team atmosphere
	Student oriented
	Good communication
Teacher skills	Subject matter expertise
	Ability to collaborate
	Sense of responsibility
	Good connection with the students
	Being open to each other
	Communicational skills
Result-oriented education	Education on different levels
	Practice oriented
Management and management information	Information about students' development
	Information on school/management level
	Communication between teachers

Comparison: ROTT ideology and teachers' meaning system

Tables 6 to 9 show the contrast between the ideological terms and the teachers' meaning system. The last column of each table depicts the percentage of the 64 participants that mentioned the corresponding term from the teachers' meaning system. This was done for the

four categories presented in Table 5. Based on the interview results the terms from the teachers' meaning system that appeared not to fit into any of the ROTT ideology terms are presented together with the ROTT ideology terms that did not have a corresponding term in the teachers' meaning system.

Team characteristics

Table 6 Team characteristics

Terms from ROTT ideology	*Terms from teachers' meaning system*	*%*
Agreement between teams	Subject matter expertise	61%
Sense of team belonging	Good collaboration	39%
Free tasks model	Good fellowship	31%
Budget responsibility	Good organisation	31%
Interaction between teams	Commitment/high stake	28%
Negotiation within teams	Good team atmosphere	25%
Acceptance of team choices	Student oriented	23%
Team freedom	Good communication	20%
Sharing of student progress info		
Differences in professional practice building		
Making alternative planning scenarios		
Team self-evaluation		

The category 'Team characteristics' presents the characteristics of the team as a whole as it points to skills that are not necessarily skills of each and every team member. The item 'subject matter expertise' in the teachers' meaning system appeared to be the most dominant aspect. As one teacher claimed:

"In order to deliver quality the team as a whole should have a substantial level of expertise, both in depth as in width, and as such covering the whole basis of the educational domain. Team members should be able to count on each other's knowledge, but also be capable of educating colleagues so as to raise the overall level of team expertise."

The idea was that students should never notice differences in the level of knowledge and in the educational approach of teachers. Although teachers underlined the importance of subject matter expertise, they did not suppose a direct causal relationship between teacher knowledge and educational results. For them the quality of the students' learning process was an intermediate variable: teachers believed that subject matter expertise (and other teacher-specific competencies, see below) is the single basis for a solid student learning process, which in turn is a prerequisite for satisfying educational results. Such a causal

relationship, starting with teachers' expertise, was conspicuously missing in the ROTT ideology, as in fact was subject matter expertise as a whole.

Another clear contrast was that teachers highly value the social effects of team work ('good fellowship' and 'good team atmosphere'), while in the ROTT ideology team sociability was downplayed or rather considered instrumental in the 'free tasks model', 'budget responsibility', and 'shared student progress info'. In the teachers' meaning system students are supposed to become better motivated by an atmosphere in which teachers stimulate each other and show that they enjoy their classes. As another teacher stated:

"I consider it very important that we as a team are really functioning like a team, that we can deal with one another, that students notice that they have teachers in front of them who enjoy giving the classes (..), that the good atmosphere within our team is noticed by the students as well. If so, I think that students will be motivated to get good results, that together [teachers and students] we achieve good results."

So, the somewhat intangible elements of the teachers' meaning system were considered important parts of the causal chain leading to educational results. In sum, the ROTT ideology fails to include the teachers' meaning system on teamwork and subject matter, pushing a far more instrumental view on improving study results instead.

Teachers' skills

Table 7 Teachers' skills

Terms from ROTT ideology	*Terms from teachers' meaning system*	*%*
Professionalism	Subject matter expertise	72%
Collaboration	Ability to collaborate	41%
Capability for self-reflection	Sense of responsibility	25%
Passion for education	Good connection with the students	22%
Intrinsic motivation	Being open to each other	20%
Self-steering	Communication skills	20%
Exemplary behaviour		
Feeling responsible		
Result awareness		
Environment awareness		
To need each other		
Holding each other accountable		
Communicative skills		
Alignment of behaviour to the school brand		

Table 7 shows that ‘subject matter expertise’ was also priority number one for the teachers individually. One of them poignantly stated:

“If you do not have subject matter expertise, then you are not able to transfer it to the students. So each and every teacher should master his or her subject matter in every detail (..).”

However, the professionalism needed for being an expert had a totally different connotation in the ROTT ideology, where it was not centred on subject matter expertise, but rather oriented to general attitudes. Knowledge transfer and ‘good connection with the students’ were not prominent ROTT terms. Teachers, however, highly valued maintaining a good relationship with their students:

“If you [as a teacher] do not have a good connection with the students, then, I think, you can forget about teaching anyway. That is my most straightforward answer. (…) When I am standing at the door at the start of the lesson, saying ‘good morning’ to everyone when they come in, then I already get that connection, then they relate to me. And you will get it back. Sometimes it takes a few weeks, especially at the beginning of a new year. (..) That connection, you have to make it and keep on making it (…). Let them know that you are there for them, then you get that reciprocity you need for effective teaching.”

This connection with students even went as far as being considered conducive to the students’ general development. Thus, educational results were far more widely defined in the teachers’ meaning system than in the ROTT ideology. A focus on learning process quality and student orientation was believed to be essential for making ROTTs work. This further confirms the teachers’ belief in the intermediate function of ‘students’ learning process’ (between ‘subject matter expertise’ on a team level and ‘good educational results’) mentioned before. But in this category teachers stated that the relationship between teacher and student influences the student’s learning process as well, as a result of which good educational results can be gained. It only seems logical that the ROTT ideology lacked a term referring to student learning process.

Some of the other terms teachers preferred, such as ‘ability to collaborate’, ‘sense of responsibility’, ‘being open to each other’, and ‘communicational skills’ were also found in the

ROTT ideology, suggesting somewhat more convergence between the two frameworks. However, the majority of ROTT ideology themes did not appear at all in the teachers' meaning system. 'Professionalism', 'capability for self-reflection', 'intrinsic motivation', 'self-steering', 'exemplary behaviour', 'result awareness', 'environment awareness', 'holding each other accountable', and 'alignment of behaviour to the school brand' were simply never mentioned. These terms do not necessarily contradict the terms of the teachers' meaning system. Yet, when such an item did appear in an interview, the teachers linked the responsibility item to the students rather than to the system as ROTT would have it:

"The notion of responsibility is in the first place focused on students. It is important, in my opinion, that we are responsible for the nurturing of the pupils, their general development. (...) It requires involvement with the student as a person."

All in all, again in this category the ROTT ideology generally diverged from the teachers' meaning system especially in its neglect of subject matter expertise. Yet, differing from what we found in the first category, the ROTT ideology does not necessarily contradict, and may even enrich the teachers' meaning system on aspects like collaboration, taking responsibility, and in stressing the emphasis on good communicative skills.

Result-oriented education

Table 8 Result-oriented education

Terms from ROTT ideology	*Terms from teachers' meaning system*	*%*
Attractive education	Education on different levels	50%
Integrated learning arrangements	Practice oriented	22%
Paying attention to student differences		
School minors		
Connection with pre-VET and University		
External relevance of the diploma		
Usage of modern educational technology		
Entrepreneurial		
Preparatory instructional phase		

The most salient result in the result-oriented education category of ROTT was the limited number of terms that resonated with the teachers' meaning system. The teachers' view on how education contributes to study results was fed by a broad set of ideas. The ROTT ideology instead had a rather explicit set of terms supposed to produce educational

results, although these concepts did not necessarily contradict the teachers' meaning system. 'Education on different levels' (ROTT) might be interpreted as a form of student orientation, the term preferred by the teachers. Similarly, teachers' 'practice orientedness' is somehow reflected in what in ROTT ideological terms is labelled 'external relevance of the diploma'. From all other ideological terms lacking a corresponding term in the teachers' meaning system, it can hardly be established whether they contradict or support the existing meaning system.

Management and management information

Table 9 Management and management information

Terms from ROTT ideology	*Terms from teachers' meaning system*	*%*
Granting discharge on basis of results	Information about student development	53%
Being in control	Provisioning of information of the school/management level	36%
Year plans	Communication between teachers	23%
Management information		
Monitoring of team performance		
Holding accountable		
Justifying		
Ownership		
Data registration for reporting		
High satisfaction of trade and industry		
High satisfaction of employees		
High satisfaction of parents		
High satisfaction of students		
Branding		
Leverage on educational results		
Team plans		

Management issues are framed differently in ROTT ideology and teachers' meaning system terms. If we look at the broad range of terms in the left column and compare it with what teachers have to say about management related issues, we see a wide gap. ROTT stresses basic management information, as well as results and attitudes to be crucial for team management, like 'monitoring of team performance', whereas teachers emphasise that basic (management) information is needed for their actual work. Teachers also give priority to information exchange and mutual communication, both of which are hard to find in the ROTT ideology. Information needed to manage the team in order to obtain team results was considered unimportant for their actual work, confirming the low priority level that teachers

gave to ROTT required issues such as the creation of underlying data, the making of team plans, and filling in questionnaires.

The missing category: 'Leadership focus'

As described above, the category 'Leadership focus' can be seen as the principal external driver for ROTT. This key element of the ROTT ideology was largely absent in the teachers' meaning system. There is a relation between this gap and the difference between the ROTT ideology and the teachers' meaning system in defining educational results. In the ROTT ideology the lower ranked elements constituted the basis that should be in place anyway, in order to allow more important elements as determined by external stakeholders to be realised. Within the teachers' meaning system, however, the (in ROTT terms) less important focus on students' gains was pre-eminent: One teacher stated:

"One should keep in mind that the students should achieve results. If the student reaches his or her goals, then we [as teachers] achieve results. We can only achieve results by motivating and stimulating the students."

Attuning their classes largely to the individual student's needs, teachers believed that students would be motivated and stimulated to learn. They precisely considered these, in ROTT terms, less prominent elements as key to their domain, whereas the more salient ROTT elements proved alien to them, as they were largely associated with the ambitions of management and supporting staff. A teacher expressed himself as follows:

"Let us first try to become an average school. I think that we already have to do a lot to get to this level. An example: If I look at last year's examination process, how much disorder we encountered. The exams were taken in the library, where students were walking in and out, and copying, while a colleague was giving a lesson. So, if they say, we want an above average school, then they have a long way to go."

Concluding, we might say that the leadership gap points to diverging definitions of educational results. Although both the ROTT ideology and the teachers' meaning system agree on many 'minor' issues, the leadership focus representing the key ROTT element proves to be the major watershed between the two cognitive frameworks.

Relevance of the ROTT ideology

If we now return to the theoretical framework presented before, we took from Sperber (1996) that new representations achieve relevance only if they reinforce existing cognitions or meet not yet satisfied needs in certain cognitive sub-domains of a meaning system. If new representations lack this relevance, it is unlikely that these representations will change the current meaning system. The results presented above show that some elements of the ROTT ideology do indeed reinforce elements in the current teachers' cognitive meaning system. Before we can answer the question, which elements of the ideology meet not yet satisfied needs, we need to determine which teacher needs have not been satisfied. From the interviews of the teacher-participants the following four unsatisfied needs came to the fore:

1. *Sufficient means to support each student in his/her own learning process*

The teachers interviewed experienced a lack of resources (time and money) to realise their ambitions with regard to supporting students in their learning process. On the other hand they expected that even less resources would be available for these ambitions if initiatives with regard to implementing 'bigger' issues (ROTT) were undertaken.

2. *Recognition of teachers' workload*

The teachers interviewed felt that stronger ambitions of the general management and supporting staff would lead to an increasing workload. Furthermore, teachers felt that general management was not aware of the fact that the teams and the individual teachers already had a too heavy workload to optimally prepare students for the exams.

3. *A sense of being master of their own time allocation priorities*

The teachers interviewed felt that they lacked sufficient opportunities to set their own time allocation priorities, while they considered this a prerequisite to gain the best results.

4. *Policies for realising teacher ambitions*

The teachers complained that no policies were developed to support initiatives they themselves started, and showed themselves frustrated over unexpected restrictions imposed by general management.

Table 10 depicts the two conditions for the relevance of ROTTs. As concluded before, the category ‘Leadership focus’ is left out of the analysis because it lacks any connection with the teachers’ meaning system. The column marked with an ‘R’ denotes which elements of the ROTT ideology reinforce the current teachers’ meaning system. If this column is left blank, then that particular element contradicts the teachers’ meaning system. The next four columns of the table indicated with a digit represent the components of the ROTT ideology that meet the four unsatisfied teacher needs described above.

Table 10 Relevance of the elements of the ROTT ideology

	R	*1**	*2**	*3**	*4**	*Relevance*
Team characteristics						
Agreements between teams	S					R
Sense of team belonging	S					R
Free tasks model				Y		R
Budget responsibility						
Interaction between teams						
Negotiation within teams						
Acceptance of team choices	S					R
Team freedom				Y		R
Sharing of student progress info						
Differences in professional practice building	S					R
Making alternative planning scenarios	S			Y		R
Team self-evaluation						
Teacher skills						
Professionalism						
Collaboration	S					R
Capability for self-reflection						
Passion for education						
Intrinsic motivation						
Self-steering				Y		R
Exemplary behaviour						
Feeling responsible	S					R
Result awareness						
Environment awareness						
To need each other	S					R
Holding each other accountable						
Communicative skills	S					R
Alignment of behaviour to the school brand						
Result-oriented education						
Attractive education						
Integrated learning arrangements						
Paying attention to student differences	S	Y		Y		R
School minors	S	Y				R
Connection with pre-VET and University						

External relevance of the diploma				
Usage of modern educational technology				
Entrepreneurial				
Preparatory instructional phase				
Management and management information				
Granting discharge on basis of results				
Being in control			Y	R
Year plans			Y	R
Management information				
Monitoring of team performance				
Holding accountable				
Justifying				
Ownership			Y	R
Data registration for reporting				
High satisfaction of trade and industry				
High satisfaction of employees				
High satisfaction of parents				
High satisfaction of students				
Branding				
Leverage on educational results		Y		R
Team plans			Y	R

1 = sufficient means to support each student in his/her own learning process
2 = recognition of teachers' heavy workload
3 = a sense of being master of their own time allocation priorities
4 = policies for realising teacher ambitions
S = the ROTT ideology element strengthens the existing meaning system
Y = the ROTT ideology element satisfies the need
R = the ROTT ideology element is relevant

The last column indicates whether or not a particular element of the ROTT ideology has relevance for the teachers, which is the case if at least one of the other five columns is not left blank. The table shows that an ROTT element may strengthen an element of the teachers' meaning system and at the same time satisfy one or more of the teachers' needs (e.g., 'paying attention to student differences'). This suggests that these elements might be more relevant than others and should be given specific attention in the implementation process. This point will be further dealt with in the discussion.

Discussion

With the approach presented in this study we intended to predict whether a specific change ideology can affect the prevailing meaning system in a specific educational setting. The results of our study show that the ROTT ideology contradicts substantial aspects of the existing teachers' meaning system of the school in question, and fails to meet not yet

satisfied needs within the meaning system of the teachers. As described in the results section, the ROTT ideology is primarily aimed at enhancing the performance of the school in the eyes of external stakeholders, urging the school management to give priority to this goal. However, the main component promising to achieve this, the leadership focus, appeared to be irrelevant for teachers. The other categories distinguished in the ROTT ideology also largely failed to either reinforce current teacher cognitions or to satisfy experienced teachers' needs. Only 19 of the 60 individual parts of the ROTT ideology proved relevant, but together these 19 did not cover a specific and coherent sub-domain. As a consequence the relevance of ROTTs proved to be limited.

This conclusion might provoke the question where exactly the teachers' meaning system differs from the ROTT ideology. In Table 3 the issues framing the analysis of the teachers' meaning system were presented. They were based on the categories found in the ROTT ideology and had a strong focus on team results. The subsequent cultural domain analysis resulted in a set of short articulations of the teachers' meaning system. The corresponding interviews provided clarifying backgrounds and highlighted some problematical aspects of the teachers' daily work.

Based upon these findings the dominant opinion of teachers about what it takes to do their job well is defined by whether or not students actually succeed in developing themselves. It makes visible that while the ROTT ideology addresses the need to enhance the results on the school level and views teacher team membership as a prerequisite for that, the teachers' meaning system rather points to an individual commitment to subject matter, colleagues, and student development. This conclusion clearly underlines and dovetails the limited relevance of the ROTT ideology.

Having established the level of relevance in this particular case, we believe it is possible, using the research method and techniques presented in this study, to predict the outcome of this ideological change effort. It seems justified to conclude that it is highly improbable that the ideology of result-oriented teams will win the 'relevance battle' with the teachers' meaning system in this institution. Given the fact that this study has been done in

the pre-implementation phase of the ROTT intervention, we claim that the negative prediction of this particular change effort will weigh upon the outcomes of possible future change initiatives in the school.

Our conclusions further suggest that in order to enhance the chances of successful change more attention should be given to unsatisfied needs of teachers, and that ideological changes that do have relevance should gain priority over those that are proven to lack such relevance. In this case, initiatives to enhance external accountability and the implementation of budget responsibility would better have been postponed, while projects aimed at giving more freedom to teams in developing and planning their own scenarios, student differences, and the implementation of one or more school minors should have received priority.

From the findings of this study a number of conclusions can be drawn that constitute a set of more general building blocks for assessing change policy plans and practices in educational settings. First, our findings strongly suggest that agents of educational change take the teachers' current meaning system seriously, which would really do justice to the widely shared idea that teachers are the decisive factor in gaining educational results. An important second, and related, remark is that the cultural fit between 'old' and 'new' must be thoroughly assessed. This means that the often rather abstract elements of any new ideology should be reflected on in relation to the more concrete level of prevailing meaning systems. Detailed elaboration in itself will not do the trick here, but it should be made explicit that new elements are not simply addressing a series of collateral 'non-issues' next to the one problem that is truly considered relevant by teachers. Table 10 clearly shows that for teachers the new ideology's theme 'being in control' is to a certain extent relevant because in the current meaning system teachers increasingly have problems with their time allocation. Yet, this rather abstract change concept from the ROTT ideology comes with additional elaborations, such as 'obtaining budget responsibility', 'prioritising activities' and 'designing professional practice building', which have no straight link to what teachers consider relevant. From this we conclude that (components of) change initiatives can win relevance by checking the extent to which they address a sufficient number of concretely experienced

problems. There are of course no exact rules to do this, but paying attention to these issues should bear consequences for the design of any change trajectory.

A last remark therefore concerns the consequences our results suggest for the change process design. It seems appropriate to emphasise attention to the elaboration and implementation of change elements that have proven to have relevance, perhaps with special attention to those that are relevant for more than one reason (like in this case 'Paying attention to student differences'; see Table 10). Starting with those elements of a change project that are relevant might eventually lead also to successfully implementing other elements as well, even if they initially lack relevance. Chances of success will only be enhanced if teachers themselves are given the opportunity to actively engage in the process (Leithwood, et al., 1996).

In this paper we largely limit the discussion about the likelihood of success of educational change projects to the discursive level. It has been widely recognised that even if the meaning system of a group of people is broadly shared, it may in practice still substantially diverge from their behaviour, especially in the case of professionals (Argyris & Schön, 1974). While the framework presented above acknowledges this divergence, the qualitative parts of the study hardly elaborate on this issue. Further qualitative research would benefit from observing actual teacher behaviour and contrast this with the teachers' meaning system. Paying more attention to the impact of what we called the 'shared environment' could also strengthen the base for assessing the relevance, and chances, of change (elements).

On a related theoretical level, our framework stresses that public representations (Sperber, 1996) concretely affect the actual behaviour of group members. Although our study acknowledges the importance of this socio-cultural perspective, an in-depth anthropological study of teachers' attitudes might further substantiate the validity of our approach to educational change. Such a study could show the interconnectedness of actors' socio-cultural practice with their cognitive reality, as "cognition is (..) defined as an individual

property, but the individual itself is an inherently social entity, constituted through its social relations with others" (Akkerman et al., 2007, p. 56).

Finally, cognitive anthropology, and its central notion of epidemiology in particular, acknowledges that the diffusion of cognitions over a population is bounded by a number of intrinsic, stabilising factors, which sets limits to the acceptance of new over current cognitions. This implies that investigating the chances of successful cultural change by focussing on process as well as context (Dalin, 1994; Hopkins, 2001; Leithwood, et al., 2002; Leithwood, et al., 1996) should go hand in hand with attention for the very nature of the proposed change in relation to the dominant meaning system. This is clearly not a simple endeavour, but we believe it is a necessary one that has too often been underestimated in the educational change management literature.

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