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ABSTRACT

This 2-year study investigated how teaching assistants affected Dutch secondary school teachers, examining: the impact of teaching assistants on teachers' tasks, teachers' attitudes toward task relief, job satisfaction, and teacher absence. Teaching assistants were hired by 16 Dutch high schools to take over non-teaching, administrative tasks. Study participants were teachers in schools with teaching assistants and in control schools (which hired substitute teachers to reduce teacher tasks). Participants completed questionnaires on job satisfaction and task responsibility before and after the intervention, and researchers collected data on teacher absence. Some participants also completed focus groups and interviews. Results indicated that some teachers took advantage of the services of teaching assistants, and they subsequently reported task relief. However, most of the teachers found that the limited duration of the study did not allow them enough time to benefit from teaching assistants. They believed that they would have made substantial use of the assistants if the assistants had occupied permanent positions in the school. Despite the limitations, intervention group teachers were more able to focus on core teaching than were control group teachers, and they had fewer absences than did control group teachers. (Contains 40 references.) (SM)

TEACHER SHORTAGES, TEACHER JOB SATISFACTION, AND PROFESSIONALISM: TEACHER ASSISTANTS IN DUTCH SECONDARY SCHOOLS

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Abstract. The job of teacher contains many tasks that do not involve the core business of teachers, teaching itself. Moreover, teachers have not been trained to do these tasks. Furthermore, teacher shortages has become a threat to the field. Therefore, teacher assistants, often with a secretarial, administrative or technical background, have been hired by 16 Dutch high schools, to take over distracting and stressful non teaching tasks (i.e. absence administration, surveillance, copying, ordering materials, archive management). Job satisfaction and absence levels have been compared to a control group. Differences between the condition have been found. However, the limited duration of the study appeared to be a major obstacle for teachers to use the teacher assistant. A permanent position of assisting staff would result in a substantial task relief for the majority of the teachers. Furthermore, less teachers will be necessary to run a school.

Introduction

Nowadays, school administrators in secondary schools frequently issue warnings with respect to the shortage of teachers. High teacher turnover rates have been reported by Ingersoll (1999a). Additionally, Ingersoll (1999b) detects an increase of Underqualified Teachers and out-of-field teaching. However, the author rejects teacher training and teachers shortages as potential explanations and states that underlying out-of-field teaching is the assumption that teachers require less subject knowledge compared to other professions: 'Teachers are treated as semi-skilled workers' (p. 33). In conclusion, Ingersoll indicates that 'the way to upgrade the quality of teaching is to upgrade the quality of the teaching job' (p. 35). In response to Ingersoll, Friedman (2000) questions financial incentives for hard-to-fill positions to elevate the teaching profession. Furthermore, the article reveals that teacher shortages are an important factor: teacher shortages demand an upgrade of the teaching profession and professionalism appears to be a key factor.

A study of the literature on teacher stress and job satisfaction has revealed several factors that influence stress and satisfaction in teaching. The most frequently mentioned factors are: management, colleagues, behavior pupils, role ambiguity and working conditions (Kyriacou, 1989, Travers & Cooper, 1996, Chan, 1998). The present study focuses primarily on the last two factors. Generally, 'working conditions' can be divided into issues related to conditions of employment (e.g. salary) and issues related to time pressure and the classroom environment. Time pressure has typically been narrowed to questions that deal with 'extensive paperwork' and 'administrative duties' (Borg, 1991, after Kyriacou & Sutcliffe, 1978). Role ambiguity concerns with the diverse positions that have traditionally been united within the job of teacher (Byrne, 1994, Pithers & Soden, 1998). Dunham (1992) has mentioned: librarian, secretary, social-worker, counselor, examiner, security officer, and restaurant manager. Being responsible for tasks that are difficult to combine often results in conflict. More specific, not being able to meet the divergent and often conflicting demands of school management, colleagues, parents, and pupils heightens the level of stress. Other authors have introduced responsibility (Hill, 1994, Travers & Cooper, 1996) as a source of stress, but also as a factor of job satisfaction. Responsibility partly resembles the issue of role ambiguity, because responsibilities are frequently conflicting in teaching. Furthermore, role insufficiency and role overload are prominent factors (Pithers e.a., 1998).

In sum, teachers are responsible for several divergent duties including teaching. Furthermore, these duties are predominantly conflicting, leading to an increased level of stress and a reduced level of job satisfaction. However, teachers are trained to teach. Consequently, they are not only poorly trained to perform several of the stated non-teaching duties, but their level of education also conflicts with the level of these tasks. Therefore it is not surprising that teachers are viewed

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as semi-skilled workers (Ingersoll, 1999b). The responsibility for numerous non teaching duties has forced teachers to increasingly limit the time they spend on their core-business. Subject knowledge, professional development, and intra colleague consultation have merely been oppressed by class room management, administrative duties, and conditional tasks: conditional with respect to the teaching itself, i.e. maintenance, preserving order, copying and taking care of the lay-out of teaching and testing materials, and surveillance.

The general theme of this study is job differentiation: teachers should be hired to teach and perform content related duties only, all other duties should be done by adequately trained and paid staff, i.e. clerks, secretaries, counselors, technical assistants. A pilot stuy (Prick, Oranje & van Rossum, 1997) has pointed out that Dutch secondary schools are predominantly in need of teacher assistants to: do administrative and secretarial tasks, run surveillance, and provide technical assistance in practical classes. Table 1 states several clusters of tasks of teacher assistants. These tasks have been appointed by several school managers consulted preceding this study.

Incorporation of the teacher assistant will evidently alter the teaching profession. Firstly, teachers have to give up duties they have done for many years. Secondly, teachers will have to coach and tutor their assistants, and cooperate with colleagues sharing the support of the assistant(s). In effect, a teacher will become a professional similar to a medical specialist, who is surrounded by nurses and operating assistants. In most schools a change of culture has to take place. In the long run, giving up these stressful and distracting duties should lower the level of stress and keep more teachers healthy up to retirement. A reduction of absence should become apparent.

With respect to the shortage of teachers the teacher assistant can play several roles. Firstly, less teachers are necessary to run a school, without compromising on the quality of education. Instead, more staff will probably enter the schools, because one teacher is financially equal to two assistants. Secondly, a career pattern can be created, starting as an assistant and ending as a senior teacher. A career perspective can both lift the attractiveness of the job and tap new sources for recruiting staff. Schools themselves will possibly educate their future staff, in collaboration with a teacher education institution.

This study has been designed to determine the impact of the teacher assistant on: (1) the tasks of the teacher; (2) attitudes of teachers towards task relief; (3) job satisfaction and absence in teaching. In other words, does working with teacher assistants in secondary schools relief teachers and how does it work in practice?

A	B	C	D	E	F	G	H
Surveillance	**Absence**	**Correcting**	**Tests and exams**	**Clerical**	**Teaching materials**	**Activities**	**Technical assistance**
(1) during breaks, individual assignments, library (2) looking after a class in case of absence teacher (3) during punishment (4) during (catch up) tests and exams (5) at homework class	(1) retrieving lists from teachers, digitalizing and feedback to mentor (2) registering at entrance (3) calling, informing parents	(1) digitalizing grades (2) correcting multiple choice tests (3) other standard correction al work	(1) copying (2) putting ready (3) lay-out	(1) correspondence teacher (2) other typing work (3) making appointments (3) copying schedules (4) taking minutes (5) digitalizing student data (6) keeping archives	(1) ordering (2) requesting brochures, company materials (3) copying, delivery at classroom (4) managing supply room (5) develop and design materials for thematic classes	(1) Organizing extra curricular activities (2) Organizing events, celebrations, cultural festivities (3) Guiding school paper (4) Guiding student council (5) Organizing school trips, projects	(1) preparing practical (2) giving instruction at practical (3) assistance during class (3) minor repair and maintenan ce lab class

Table 1: clusters of duties of the teacher assistant

Method

In a nationally published article schools have been incited to enter a two-year nationwide study involving extra funding to relieve teachers. A selection has been made from 400 schools that responded. Stratification of the sample has been based on urbanization and type of school (i.e. level and size) to ascertain external validity. Sixteen pairs of similar schools have been composed. One school in every pair has randomly been assigned to one of two conditions, the other school in the pair has been awarded the other condition. A quasi-experimental pretest-posttest design describes the study best. The lack of an unattended control condition has been recognized However, expected low response rates on measurements in a condition without incentives and therefore a poor validity does not countervail the scientific gain of a control condition in this exploratory field setting. A total of 1861 teachers have been involved in the study. The sample of teachers does not represent the population of Dutch secondary teachers closely. In the study a relatively aged group has intentionally been selected. The population of teachers in most Western-European countries is aging. A relatively aged population at the time of the study resembles the whole population five to ten years later, when the findings will possibly be applied. The mean age is 50.0 years with standard deviation 8.4. Furthermore, 75% of the teachers is 45 years or older at the start of the study. The percentage males is 69.5%. Nationally, 57.6% of the teachers is 45 years of age or older. The percentage males is nationally 64% (there is a correlation between gender and age). Additionally, 20.1 lessons (with a standard deviation of 7.1) are taught each week by teachers participating in the study. Their mean number of years as a teacher is 20.2 (with a standard deviation of 8.7).

Schools in the control condition have been awarded extra funding to reduce the tasks of teachers aged 52 and over by ten percent. Substitute teachers have been hired. In the experimental condition an equal amount of money (necessary to give teachers 52 and over a task reduction of ten percent) has been used to hire teacher assistants. Depending on school size, the participating schools have been able to hire two to four assistants, with a total of 44 in the study. Schools have been allowed to compose a task description themselves, based on the outline of Table 1. Consequently, most schools have made an inventory of their specific needs and have subsequently looked for adequate assistants. The rationale of this procedure is the enormous diversity among schools and the expectation that willingness to cooperate with the teacher assistants depends predominantly on commitment to and responsibility for the assistant.

During the experiment the Teacher Job Satisfaction Questionnaire (Prick & Oranje, 1997) has been administered, before the study commenced (June, 1998) and afterwards (July, 2000). Furthermore, an instrument to detect to what extent teachers give up duties to teacher assistants has been administered in the experimental condition during the second year. In addition, absence rates have been made to the disposal of the research. Qualitatively, several focus-groups have been organized involving school management and, separately, teacher assistants. Finally, little less than hundred teachers have been interviewed during the study. Full cooperation with the research has been one of the conditions to enter the selection pool.

The Teacher Job Satisfaction Questionnaire has been based on the questionnaire of Prick (1989) and been restyled according to several authors in the field of teacher job satisfaction and stress (Kim & Loadman, 1990, Verdugo, 1993, Hill, 1994, Taylor & Tashakkori, 1994, Griffin & Tesluk, 1995, Chaplain, 1995, Lam, Foong & Moo, 1995 Travers & Cooper, 1996). The original test gives an indication of the general job satisfaction and several sub fields: school management, colleagues, teaching itself, and working conditions. The scale working conditions has been narrowed to time restraints. Other parts, mostly concerning salary, evoke extreme responses rather than valid indications. The scales role ambiguity and behavior of pupils have been added. Furthermore, a general stress scale (predominantly based on Maslach, 1987, Kyriacou, 1989, Borg, 1990, Hui & Chan, 1996 and qualitative pilot testing) has been constructed. However, principal component analysis with a substantive pilot test (n=200) indicated that general stress closely resembles satisfaction with teaching itself. Similar overlap has been reported by Chaplain (1995), Hui and Chan (1996) and Chan (1998). Therefore, the two scales have been merged into one scale, named 'teaching'. A total of 54 items have been administered. The items and several psychometric properties can be found in the Appendix. Overall, the scales have satisfactory reliabilities (0.70 to 0.93).

The second questionnaire, providing an indication of the tasks given up, has been constructed, based on the tasks of the teacher assistants (see Table 1). Several general questions have been added, for instance: "to what extent do you personally make use of the teacher assistant(s)?" and "to what extent do you feel relieved as a result of the teacher assistant(s)?". Furthermore, absence rates have been computed into absence

frequencies, mean duration of absences and absence percentage, as part of the potential working time. The indicator absence percentage has been corrected for part time working. With respect to the interviews, the set-up has been as following: two interviewers and two teachers entered the conversation. The interviews were held at the schools. Main subjects to be discussed were: (a) which tasks they give up and which potential tasks not, (b) cooperation with and functioning of the teacher assistants, (c) task relieve, and (d) practical issues, i.e. their role in the selection process at the start, the procedure with respect to handing out duties, and the guidance of the teacher assistants.

Results

Although most schools have expressed full satisfaction, not every participating school has been successful in acquiring suited assistants. In spite of a narrow labor market, the number of applicants has not ever been an obstacle. However, unclear and poorly thought-out job descriptions have sometimes resulted in hiring staff not adequately qualified or otherwise non suitable for the position.

Several types of people have applied and hired for the job of teacher assistant: mothers picking up their career after childcare, graduates of adolescent studies, teachers who want less responsibility, people who want to become teacher in the future, and volunteers in the school. Additionally, minorities have frequently been hired. Although the percentage higher educated in this group is small compared to non minorities, it possesses a major intellectual reserve. Programs have been developed to combine the position of assistant with a study to become a qualified teacher.

Seven hundred eighty two teachers, resembling 84.2% of the total number of teachers involved in the experimental condition, filled out the questionnaire on giving up tasks. Only 23.3% of the teachers claimed to make considerable use of the teacher assistants. Moderate use has been reported by 21.7% of the teachers, resulting in 55.0% who makes little to no use. This is mostly due to the limited duration of the research. If the assistants had been a structural part of the staff then 82.3% of the teachers claim, that they would have made considerable use of the assistance. Consequently, a considerable task mitigation caused by the assistants is reported by 86.8% of the teachers, given that they make subsequent use of the assistance. Otherwise (non-users), little over one fifth report a considerable task relieve. Furthermore, 70.1% of the teachers in the control condition claim that a teacher assistant will cause a considerable task mitigation.

Clearly, the tasks of the teachers have changed in the experimental condition. The following list contains the eight duties of the teacher assistant, that have been given up. Between brackets is the percentage of teachers that gave up the listed tasks during the experiment, given that they were in charge of that task prior to the experiment: surveillance around the school (95.0%), collecting contributions for activities (93.8%), surveillance during breaks (90.9%), copying of written exams and teaching materials (83.7%), audio-visual equipment preparation and set-up (83.6%), guidance of school newspaper and students council (78.5%), contacting parents in case of absence, setting-up meetings with parents (78.2%), and assistance during practical (71.6%).

In sum, only a limited part of the teachers has made considerable use of the teacher assistants. However, if the position of teacher assistants had been permanent, then a large majority would have made use of them. Additionally, those who did make use of the assistants, reported a considerable relief. The duties that teachers tend to give up are predominantly secretarial or involve surveillance. Furthermore, teacher assistants are called in to give technical assistance during practical.

The interviews provide some additional information to the conclusions drawn above. Overall, teachers express great enthusiasm with concern to the assistants. However, the atmosphere in a school determines to what extent teachers call in assistants. This study distinguishes two different types of schools: closed and open. In a closed atmosphere teacher hardly cooperate and are only responsible for their classroom. In this case teachers do not easily give up duties, especially with respect to tasks that take place within the classroom. In contrast, cooperation is common in an open atmosphere, where teachers are used to visit each other during class. In that case the assistant will not be perceived as a threat.

A MANOVA has been applied to detect differences between the two conditions with respect to the sum scales of job satisfaction. Table 2 provides the means and standard deviations of the summed scales of job satisfaction, for both conditions. A comparison has been made between the pre- and the posttest of job satisfaction and between the two conditions. An interaction would indicate an experimental effect.

The pretest on teacher job satisfaction has been filled out by 1488 teachers: 76.0% in the experimental condition and 83.9% in the control condition. The

posttest has been filled out by only 1338 teachers: 62.2% in the experimental condition and 81.5% in the experimental condition. Response rates are relatively low in the experimental condition. A possible explanation is the controversy that accompanies the teacher assistant. The demand of a fundamental change in the way teachers work has possibly turned some teachers against the study.

Table 3 states the results of the MANOVA. This MANOVA reveals an effect of test moment and condition but no interaction. In effect, the job satisfaction has equally been increased between the pre- and the posttest for both conditions. Furthermore, the job satisfaction in the experimental condition is higher than in the control condition, without consideration of the test moment. The effect of test moment is limited to role ambiguity and the behavior of pupils. The effect of condition is limited to general satisfaction, teaching, and behavior of pupils.

		general satisfaction	teaching	school management	colleagues	time pressure	role ambiguity responsibility	behavior of pupils
Pretest	**Experimental**	36.52	36.33	20.92	22.49	9.37	18.94	15.83
	n=612	(9.55)	(8.69)	(5.53)	(4.30)	(3.52)	(4.01)	(5.40)
	Control	35.51	35.41	21.66	22.33	9.19	18.73	15.44
	n=715	(9.53)	(8.72)	(5.22)	(4.30)	(3.47)	(3.98)	(4.81)
Posttest	**Experimental**	36.85	36.27	21.79	22.66	9.41	19.61	16.42
	n=457	(9.23)	(8.40)	(5.48)	(4.26)	(3.19)	(3.83)	(5.69)
	Control	35.50	35.68	21.63	22.18	9.62	19.50	15.85
	n=638	(9.89)	(8.77)	(5.19)	(4.08)	(3.41)	(3.92)	(5.53)

Table 2: Means and standard deviations of the summed scales of teacher job satisfaction: a higher value indicates a higher satisfaction

	Box M: F (p) = 1.586 (0.001)	*Wilk's Λ*	*F(df1,df2)*	*p*	*power*
test moment		**0.988**	**4.184 (7,2412)**	**0.000**	**0.990**
	Univariate	***Levene F (p)***			
	role ambiguity	0.432 (0.730)	19.432 (1,2418)	0.000	0.993
	behavior of pupils	8.371 (0.000)	5.209 (1,2418)	0.023	0.626
condition		**0.991**	**3.187 (7,2412)**	**0.002**	**0.954**
	Univariate	***Levene F (p)***			
	general job satisfaction	1.664 (0.173)	8.961 (1,2418)	0.003	0.849
	teaching	0.803 (0.492)	4.447 (1,2418)	0.035	0.559
	behavior of pupils	8.371 (0.000)	4.812 (1,2418)	0.028	0.592
interaction		**0.996**	**1.261 (7,2412)**	**0.266**	**0.548**

Table 3: MANOVA test results for condition, test moment, and interaction by summed scales of job satisfaction

Characteristic	**Absence Percentage**		**Absence Frequency**		**Mean Duration in Days**	
Condition	**Experimental**	**Control**	**Experimental**	**Control**	**Experimental**	**Control**
1996-1997	6.77 (18.13)	8.14 (20.26)	1.58 (2.02)	1.31 (1.52)	18.98 (63.12)	23.17 (67.95)
1997-1998	5.86 (16.18)	8.41 (19.43)	1.58 (2.18)	1.68 (1.81)	14.89 (52.85)	20.42 (59.34)
1998-1999	5.15 (14.05)	8.39 (18.12)	1.58 (2.07)	1.79 (2.02)	11.40 (42.19)	20.12 (57.05)

Table 4: means and standard deviation of the absence percentage, absence frequency and the mean duration in days

	Box M: F (p) = 29.524 (0.000)	*Wilk's Λ*	*F(df1,df2)*	*p*	*power*
year		**0.996**	**5.170 (6,15566)**	**0.000**	**0.995**
	Univariate	***Levene F (p)***			
	Absence Frequency	23.231 (0.000)	9.759 (2,7785)	0.000	0.983
	Mean Duration	18.580 (0.000)	5.111 (2,7785)	0.006	0.824
condition		**0.996**	**11.526 (3,7783)**	**0.000**	**1.000**
	Univariate	***Levene F (p)***			
	Mean Duration	18.580 (0.000)	20.327 (1,7785)	0.000	0.995
	Absence Percentage	20.009 (0.000)	31.850 (1,7785)	0.000	1.000
interaction		**0.997**	**3.976 (6,15566)**	**0.001**	**0.974**
	Univariate	***Levene F (p)***			
	Absence Frequency	23.231 (0.000)	10.500 (2,7785)	0.000	0.989

Table 5: MANOVA test results for condition, year, and interaction by absence characteristics

The analyses of the job satisfaction scales have brought to light that working with teacher assistants has not resulted in a substantial increase of the satisfaction compared to a traditional way of working. However, some of the findings and the additional analyses point towards an interaction with respect to the experimental condition. Possibly, satisfaction with the school management has increased to a higher degree in the experimental condition than in the control condition. In contrast, the satisfaction with time restraints has decreased to a higher degree in the experimental condition compared to the control condition. Nevertheless, unequal variance hyperplanes may have been an important factor in these results.

With respect to the absence characteristics, information of 2,546 teachers has been made available to the study. The substantive difference with the reported number of teachers participating stems from the natural flow of teachers entering and leaving schools. The information of the last experimental year is exceptionably limited (1,600 teachers). Therefore, analyses will concern only the first three years available. Table 4 states the means and standard deviations of the absence characteristics. Table 5 describes the MANOVA test results (full factorial).

Clearly, the characteristics of absence are functions of each other. Distributional properties of the groups place the findings in a weak position. Nevertheless, some conclusions will be drawn. The interaction effect of absence frequency resembles what the means in Table 5 already indicated: an increase in the control condition and a stable situation in the experimental condition. Figure 1 is a graphical representation. Logically, the decrease of the mean duration in both conditions corresponds to a decrease of the absence percentage in the experimental condition and a stable percentage in the control condition.

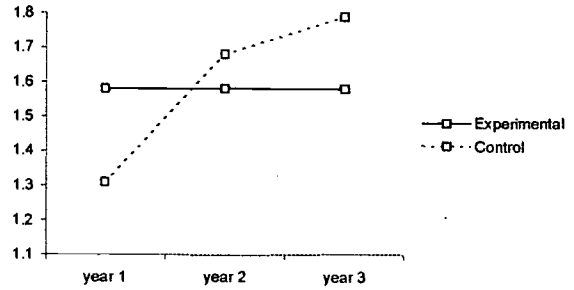

Figure 1: absence frequency by years and condition

There is a structural difference between the conditions. The starting point of the experimental condition has been more positive with concern to the mean number of absence days. Furthermore, the main differences have occurred between the first and the second year, while the study commenced at the end of the second year. The error[2] variability of absence statistics may be of greater influence compared to the modeled variability.

Discussion and Conclusion

The findings presented here are two-fold. A group of teachers makes substantial use of the services of the teacher assistants and, subsequently, reports task relief. In contrast, the majority of the teachers show conditionality: they would have made substantial use of the assistants if the assistants occupied a permanent

[2] Error with respect to the conditions in the study

position in the school. However, a correspondence of task relief and assisting personnel has been established. Furthermore, the tasks of the teacher have significantly changed as a result of the incorporation of teacher assistants. The assistants have hardly been called in for duties within the classroom or during class. In contrast, they have predominantly supported teachers with concern to administrative and secretarial tasks and surveillance. In other words: they managed the perimeter of teaching, therefore, teachers were able to focus on their core-business. Compared to the control condition, satisfaction with the school management seems to be increased relatively in the experimental condition. In contrast, time pressure has increased as well. Finally, the absence frequency has increased in the control condition compared to a stationary situation in the experimental condition.

The school management and time pressure are interesting sub fields of job satisfaction. The satisfaction with the school management is quite equal among the two conditions except for the pretest in the experimental condition. In other words, a relative low level has restored itself towards a general level. As stated before, the introduction of teacher assistants has given birth to several controversies concerning the professionalism of teachers. Teacher unions have claimed the assistant to be a cutback, being a relatively cheap workforce. The idea of an increase of the professionalism of teachers through teacher assistants, has conquered the field only after one year of experimentation. The teacher shortages have supported the acceptance of this idea. Anyhow, this controversy may have caused a decrease in the satisfaction with the party introducing the teacher assistant to the staff, the school management. Alternatively, low response rates at the pretest of the Teacher Job Satisfaction Questionnaire were cause to send a reminder. Because of privacy, the school management has traced the non respondents based on birth dates. An additional MANOVA has made clear that the group responding after a non response notification showed a significantly lower level of satisfaction with the school management. Since the low response was predominantly an issue in the experimental condition, it offers some explanation for the difference.

Satisfaction with time pressure concerns a traditional source of stress rather than job satisfaction. A premise of this study has been that time pressure stems from the responsibility of teachers for numerous peripheral tasks and as a result the lack the time to perform professional duties (i.e. maintaining subject knowledge, skill development and professional training, class preparation, consulting colleagues). Nevertheless, the time pressure has been increased in the experimental condition, indicating a negative effect. Several factors may have contributed to this effect. Firstly, the unfamiliarity of schools with teacher assistants has resulted in turmoil at the start. An investment of time by the teachers to instruct the assistants is necessary in order to reap the rewards. Secondly, the assistants demanded a strict time planning from teachers, for a successful cooperation. Therefore further time investments are obligate. Finally, because of the presence of assistants, teachers are encouraged to evaluate their working habits, tasks and professionalism. A possible cause can be a heightened awareness of time restraints in stead of an actual increase of the level of time pressure.

Not only with respect to the job satisfaction scales, but also with respect to the absence characteristics, the limitations of the group have to be taken in mind. Since only a minority has made use of the teacher assistants, only minor effects can be expected. An equal restraint is placed upon the study by the relative short duration. The interviews revealed that a start up period of a year is common and a habituation period of another year necessary. Especially decreasing absence and turnover rates are long term effects. Nevertheless, schools frequently report to have room for many more assistants.

At this point, some methodological issues should be addressed. This study has a strong field setting, close to action research. Consequently, the two conditions have been far from independent. Several publications, with the aim to change the initial negative public opinion towards non teachers within the classroom, have informed the control condition about the findings in the experimental condition. Also, numerous developments have reached the field during the study. These concerned substantive changes in the curriculum and the school organization and probably have had far more impact on the job of teacher than the teacher assistants. Furthermore, the schools have enjoyed full autonomy with concern to the selection of assistants and tasks. The power of differentiation is also the weakness of this study: every school is a study on itself, experimental manipulation becomes diffuse. Another issue concerns the fact that the research is policy based and to a certain extent policy controlled. As a result, the research has been conducted within restrictive boundaries concerning future policies. Finally, a lot of attention has been devoted to the experimental condition leaving the control group practically unharmed, but also unattended. This alone may have evoked a positive effect in the experimental condition.

Some statistical issues should be mentioned as well. Typically, a MANOVA assumes independence of observations, normal distribution and equal variances (or variance hyperplanes in the multivariate case). This study has a weak position with respect to all three of them. Teachers staffing the same school results in dependence. Fortunately, the relatively large groups provide some protection. The assumption of normality is quite robust, the assumption of equal variances is not. It becomes clear that this assumptions is violated, especially concerning the characteristics of absence. Therefore, the conclusions drawn should be handled with care.

Further issues

Education shifts towards individual teaching and learning over the next few years. As computers have become standard inventory, teachers will probably spend less time in front of the class. Furthermore, an individualistic approach creates the possibility to differentiate among pupils and settle individual learning goals. The teacher assistant can play an important role as provider of facilities, materials, tests, administrating the progress of students and surveillance during individual assignments. The transformation to an individual learning environment will take some time, although the shortage of teachers may accelerate the process. Basically, there are not enough teachers to fill all the teaching positions in the next ten years. Ways have to be found to restructure the education in order to compensate teacher shortages.

There are many solutions to the problem of turnover among teachers and many ways to obtain task relief. Traditional policies have been a reduction of the number of pupils per teacher and a reduction of the number of classes taught each week. However, the majority of these policies demand an investment of more teachers before the gain, less turnover, can be obtained. The teacher assistant approach is different since it counters the problem of teacher shortages to a certain extent and has the same expected positive effects of less turnover in the long term. Furthermore, policies that incorporate less pupils per class or less classes do not consider recent educational developments. The current individualistic approach to education changes the teacher from a lector into a tutor, guiding the learning process in stead of making the learning process. The term 'class' will need to be reconsidered.

Some questions have been raised with concern to the quality of the education, when less teachers are involved. In the interviews teachers have claimed that the quality has been increased, because they can devote more time to their pupils, in stead of being bothered with all kinds of peripheral duties. Furthermore, teacher assistants have often a training in adolescents studies or social work. In some cases, they have a more adequate education to guide pupils than teachers have. Consequently, the combination of the teacher specialized in a subject and didactics with the assistant specialized in adolescents and social behavior promises to increase the quality of education.

Teachers, that claim to have used the supporting staff substantially, often view the assistant as a reward. The assistants have made it possible for them to work as a professional and, consequently, made the job of teacher more satisfactory and less stressful. Several teachers have expressed fear with respect to the end of the study. Effort has been put into the continuity of the assistance: the majority of the participating schools have found budget to hire the assistants themselves. However, using teaching budget to hire assistants is still controversial.

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APPENDIX TEACHER JOB SATISFACTION QUESTIONNAIRE[1]

		mean	var	R_{it}	R^2
	General Job Satisfaction				
1	There is no better job than that of teacher for me	2.90	1.14	0.65	0.46
2[2]	As a teacher, it is difficult to find satisfaction in this job	3.64	1.18	0.61	0.40
3	The advantages of being a teacher are greater than the disadvantages	3.58	1.18	0.55	0.34
4[2]	I have wondered now and then whether I would have been better off if I had chosen a different profession	3.26	1.41	0.70	0.59
5	If I could do everything over again, I would certainly become a teacher	3.08	1.27	0.76	0.59
6[2]	If I got the chance I would take another job	3.45	1.27	0.72	0.57
7[2]	I sometimes regret that I have become a teacher	3.51	1.31	0.76	0.64
8	Compared with most other professions, that of teacher offers a lot of satisfaction	2.94	1.11	0.69	0.53
9	I am very satisfied with my profession	3.42	1.11	0.79	0.63
10	No other single profession has as many positive sides as that of teacher	2.29	1.06	0.54	0.36
11	I find teaching fascinating	3.92	0.97	0.54	0.33
	Cronbach's alpha 0.91				**N =1442**
	Teaching				
1[2]	Lately, I feel more tense than several years ago	4.17	1.06	0.74	0.61
2[2]	At the end of the school day I look up to the next day	4.48	0.89	0.66	0.53
3[2]	I go to school with a heavy heart	3.89	1.06	0.57	0.37
4	At the beginning of the week I start with a new heart	2.76	1.26	0.63	0.48
5[2]	At the end of a workday I feel empty	3.52	1.27	0.75	0.59
6[2]	I feel "burnt out" by my job	3.77	1.18	0.66	0.47
7[2]	I feel very tired when a get up and a new work day lies ahead	2.89	1.42	0.55	0.33
8[2]	During classes I often feel tense	3.76	1.18	0.66	0.49
9[2]	I find it hard to teach daily	3.72	1.22	0.72	0.55
10[2]	I feel often relieved when the last class of the day has ended	2.93	1.28	0.67	0.51
	Cronbach's alpha 0.90				**N =1446**
	School management				
1[2]	In my opinion the school management doesn't support me enough in conflicts with pupils	3.54	1.22	0.47	0.23
2	In my school every teacher can count on the support of the school management	3.00	1.18	0.57	0.38
3	I have the feeling that the school management is well-disposed towards me	3.83	1.08	0.60	0.38
4[2]	The school management doesn't consider teachers in it's policy	2.82	1.17	0.64	0.43
5[2]	By the school management a certain pressure is exerted on the teachers	2.41	1.03	0.43	0.20

6	School management and teachers go about each other in a pleasant way	3.44	1.09	0.61	0.42
7[2]	As a teacher I have little influence on the school's policy	2.28	1.12	0.47	0.26
	Cronbach's alpha 0.81			**N = 1446**	

Time Pressure

1	As a teacher, you have a fair amount of time off	2.58	1.18	0.54	0.35
2[2]	I have not enough time for all the work I have to do	2.44	1.19	0.64	0.42
3[2]	As a teacher you often bring work back home	1.60	0.95	0.45	0.23
4[2]	As a teacher little time is left for yourself or your family	3.05	1.19	0.63	0.44
5[2]	I have the feeling that I spend more time on preparing and scoring than on teaching	3.15	1.23	0.59	0.39
6[2]	Because of administrative duties, I have barely enough time for a decent preparation	2.91	1.23	0.53	0.38
7[2]	I hardly have the time to keep up with the developments in my field of teaching	2.63	1.19	0.50	0.29
	Cronbach's alpha 0.82			**N = 1465**	

Colleagues

1[2]	I have little contact with my colleagues	4.02	1.07	0.53	0.29
2	I think that I have been lucky with regard to my colleagues	4.06	0.98	0.57	0.35
3[2]	In case of problems little support is to be expected from my colleagues	3.71	1.13	0.53	0.31
4	I have many good friends among my colleagues	3.12	1.13	0.41	0.19
5	The relationships between colleagues are excellent on my school	3.54	1.01	0.61	0.40
6	I can frankly speak with my colleagues about work	3.89	0.92	0.57	0.34
	Cronbach's alpha 0.78			**N = 1453**	

Role ambiguity

1[2]	It is difficult for me to meet the opposite demands of children, parents and colleagues	2.69	1.18	0.40	0.18
2[2]	I often ask myself to what extent I have responsibilities	3.29	1.13	0.44	0.21
3	It is clear to me what is to be expected from a teacher	3.87	1.00	0.39	0.46
4[2]	Parents expect more than is reasonable from the school	2.40	1.05	0.28	0.12
5	I have a clear image of the tasks I have as a teacher	3.86	0.96	0.49	0.49
6[2]	I find it problematic that, as a teacher, you have to divide your attention among several tasks	2.77	1.25	0.34	0.12
	Cronbach's alpha 0.66			**N = 1440**	

Behavior of pupils

1[2]	I am often confronted with impolite behavior of students	2.15	1.09	0.62	0.47
2[2]	The aggressive behavior of students burdens me	1.81	1.06	0.63	0.46
3[2]	I have a hard time dealing with noisy classes	1.92	0.96	0.65	0.44
4[2]	As a teacher, it is difficult to deal with unmotivated pupils	1.85	0.95	0.53	0.29
5[2]	I get very tensed because of quarrels between pupils	2.97	1.08	0.45	0.22
6[2]	Students who test you are a problem to me	2.58	1.23	0.58	0.36
7[2]	There is a lot of noise in and around the school building	2.41	1.08	0.46	0.24
	Cronbach's alpha 0.84			**N = 1449**	

[1] The items have been translated for the purpose of this paper.
[2] These items are considered negative and recoded for analysis purposes.

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