Changing school culture: From deficiencies to strengths—An intervention study about school culture*

Horst Zeinz, Annette Scheunpflug

(Faculty of Education, University of Erlangen-Nuremberg, D-90478, Germany)

Abstract: This research project focuses on the question: Which effects do teachers' attitudes have on students' academic self-concept and students' competences? The study is informed by the theoretical perspective that competences and individual skills can be improved especially when students and teachers are confident about the possibility of change of these variables and when teachers make this explicit as a central theme. In our intervention study, we investigate whether a change in the teaching and learning setting (moving from a focus on deficits to a focus on strengths) is able to enhance students' academic self-concept and students' competences, even across domains.

Key words: school culture; teachers' attitudes; implicit theories

1. Theoretical background and research question

Along with the quality of instruction, a number of other factors contribute to the acquisition of competences by students: factors such as well-being in school, self-concept, motivation and the students' own interests. How can they be changed?

In this intervention the aim of the research is to investigate how these aspects are connected to the agenda of teachers and whether and to what extent the agenda can be changed by particular, specific interventions. Such interventions include the advanced training of teachers, more time for preparation by the teachers, and conceptual innovation. This study is part of an evaluation of a pilot project carried out by the Bavarian Ministry of Education, the objective is to work against the deficit-orientation prevalent in some schools—as seen, for example, in the number of students repeating an academic year.

1.1 Implicit theories

Failures endanger motivation and self-confidence, especially when they are related to a belief in a deficit of one's own competences (Dweck, 1999). Along with assumptions about the level of their own competences, individuals also have different theories about the possibility of change of their own competences. These "implicit theories" (Dresel & Ziegler, 2006) usually correlate closely to school achievement. Competences and individual skills can be enhanced, especially when students and teachers believe in the possibility of change of competences and individual skills and when teachers highlight this as a central theme. The focus of the research is on a number of variables (for example, implicit theories and goal orientations) that are sometimes considered intangible in

* This project is financed by Foundation for Education in Public Private Partnership.

Horst Zeinz, Ph.D., Faculty of Education, University of Erlangen-Nuremberg; research fields: education and culture, philosophy of education.

Annette Scheunpflug, Ph.D., professor, Faculty of Education, University of Erlangen-Nuremberg; research fields: education and culture, philosophy of education.

education.

1.2 The impact of teachers

These variables depending on school climate are influenced by the actions of teachers. They can create opportunities for the students to experience self-efficacy—or they can avoid providing these opportunities. There are numerous empirical suggestions for a relation between the epistemological beliefs of teachers and the type of teaching they provide (Stipek, et al., 2001; Ditton & Arnoldt, 2004; Pauli, et al., 2005; Hartinger, et al., 2006).

1.3 Interventions

In the project we are outlining in this paper, teachers are trained to take a closer look at corresponding aspects of their behaviour in education (for example, workshops, trainings, activities concerning school structure and cooperation with parents, etc.). We then investigate whether and how far these interventions can lead to a change.

The interventions are ongoing, beginning in September 2008 and continuing through July 2011. Previous research has found that teachers' beliefs in the effects of training are relatively stable (Pajares, 1992; Richardson, 1996). We seek to investigate whether an intervention will be evident in a change of teachers' beliefs, and whether or not it can have an effect on the students. So the research question is: Can the epistemological beliefs of teachers be changed and will that change enhance students' academic self-concept and students' competences?

2. Method

In this section of the paper we give you a brief overview of the sample, then name several approaches involved, before providing several examples of the instruments.

2.1 Sample

In most of the Federal States' School System of the German, students undergo a relatively early selection process. After the 4th grade (at the age of about ten years), there is a tracking into three different types of school: Hauptschule, Realschule and Gymnasium (as it is shown in Figure 1).

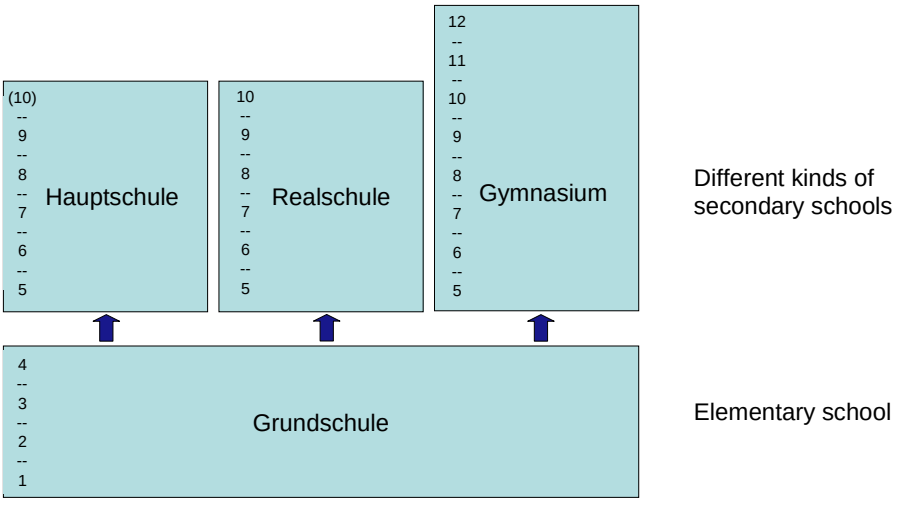

Figure 1 Tracking in secondary schools in Bavarian school system (simplified)

At the end of the 4th grade, parents can ask the class teacher to issue a recommendation for a specific kind of secondary school. This recommendation is based on the marks of the main subjects like mathematics, German and social studies, as well as on the appraisal of the social behaviour, learning behaviour and work habits. The parents

can accept this recommendation or send their child to a “realschule” or “gymnasium” for a probationary period. These schools then decide whether or not the student is allowed to attend the school further on. If the student is not able to show the competences needed for these types of secondary school, he or she would be sent to the “hauptschule”. An important point is that the German school system is permeable, which means that students can switch between the different types of secondary schools after each year if they show certain competences (especially good marks).

Realschules have to deal with the most heterogeneous pupils of all types of secondary schools. Therefore, realschules are the most suitable secondary schools to test innovative programs that might be able to lead to a change of school culture.

The project we are here outlining started in September 2007 with ten realschules in Bavaria, Southern Germany. These schools joined a program in which they are allowed to develop different projects that can help to enhance students’ academic self-concept and students’ competences. They are supported by the Bavarian Ministry of Education in many ways. Below are three examples of the different school projects:

(1) Example 1

Example 1 is from a school that started a project called VIP (very interested pupils). For 9th grade students there is an advancement of those students judged to be the best and also the most committed pupils in all main subjects (for example, English and mathematics). There is a personal invitation by the teachers to the students to take part in this project. There are no marks, but participants gain a certificate of participation.

(2) Example 2

Example 2 is from another school that started a project called “technigirls”. There is a special course for 6th grade girl students. The aim of the course is the advancement of interest in the natural sciences among female students. The students are involved in excursions and study visits, for example to institutions and universities.

(3) Example 3

Example 3 takes place in different schools and grades. This project is called “scoring rubrics”. Teachers offer different materials on a certain subject or theme. Then the students estimate their own competences in different “scoring rubrics” (which describe the actual state of knowledge or abilities). The students also declare which “scoring rubric” they want to reach in a certain time (which describes the target state). Then the students tell which materials and methods they like to use in order to reach their aims. After a certain time students and teachers reflect about success and further activities. This process is repeated, not only as a final test at the end, but also throughout the learning process.

2.2 Approaches

The research is multi-level, and is based on:

(1) Questionnaires from three classes from each of the ten schools involved in the model project (thus involving a total of approximately 1000 students);

(2) Questionnaires from the teaching staff of the model project schools (This is a total of approximately 500 teachers);

(3) Questionnaires from a similar number of students and teachers from control schools without the aforementioned interventions. The control schools are comparable in terms of school attributes such as size, patronage and resources, etc.;

(4) Participant observation of the teacher trainings, group discussions with the participating teachers, and analytic description of the formal intervention events.

2.3 Instruments

In order to investigate teachers and students variables, we used questionnaires. Below is an overview of the most important constructs and item examples the two questionnaires.

2.3.1 Teachers' questionnaire

The teachers' questionnaire contains questions regarding constructs shown in Table 1.

Table 1 Constructs and item examples of the teachers' questionnaire

Construct	Item example
Job satisfaction	(1) How content are you personally with your profession? (2) The items have been processed using a 5-stage response format from "very content" to "very discontent".
Use of different work forms in lessons	(1) I use open work forms in lessons (free work time, learning at stations, project work, business game, ...). (2) The items have been processed using a 5-stage response format from "daily" to "never".
Implicit theories about their students	(1) My students are able to enhance their competences. (2) The items have been processed using a 6-stage response format from "absolutely right" to "not right at all".
Teachers' orientation on reference norms	(1) I think, a good achievement of a student is if it is better than his/her result before. (2) The items have been processed using a 4-stage response format from "no" to "yes".
Teachers' goal orientations	(1) In my lessons, I make a point of the students defining their learning activities on their own. (2) The items have been processed using a 6-stage response format from "absolutely right" to "not right at all".
Teachers' self-efficacy	(1) In unexpected situations I always know how to act. (2) The items have been processed using a 4-stage response format from "disagree completely" to "agree completely".
Cooperation with parents	(1) I inform parents about the strengths and weaknesses of their children. (2) The items have been processed using a 4-stage response format from "applies not at all" to "applies completely".
Time management and classroom management	(1) For personal and social concerns I take my time even during lessons. (2) The items have been processed using a 4-stage response format from "applies not at all" to "applies completely".
Use of homework	(1) In my subjects I give homework. It mostly is worksheets/ workbooks. (2) The items have been processed using a 4-stage response format from "never" to "always".
Support of students autonomy	(1) Felix is an average student. During the last two weeks he seemed to be dull and did not participate on team working. Exercises in lessons he does accurately, but he does not do his homework. A Telephone call with his mother brought no helping information. The best approach for the teacher of Felix is: She should convince him of the importance of homework and that he does it for his own use. (2) The items have been processed using a 7-stage response format from "very inadequate" to "very adequate".

2.3.2 Students' questionnaire

The students' questionnaire contains questions to the constructs as shown in Table 2:

Table 2 Constructs and item examples of the students' questionnaire

Construct	Item example
Interest in academic contents	(1) As reading is fun to me, I would not like to give it up. (2) The items have been processed using a 4-stage response format from "right" to "not right".
Self-confidence	(1) All in all I am content with myself. (2) The items have been processed using a 4-stage response format from "right" to "not right".
Academic self-concept	(1) In school I know how to do … (2) … item is followed by a 4-stage response format from "a lot" to "few".

(to be continued)

Students' implicit theories	(1) When I am good at something, I don't ever forget it. (2) The items have been processed using a 6-stage response format from "absolutely right" to "not right at all".
Well-being in school	(1) I love to go to my school. (2) The items have been processed using a 5-stage response format from "absolutely right" to "not right at all".
Experience of helplessness	(1) No matter how much I do in my schoolwork, I won't get a good grade anyway. (2) The items have been processed using a 6-stage response format from "absolutely right" to "not right at all".
Exposure to failure	(1) When I make a mistake, I systematically try to correct it by myself. (2) The items have been processed using a 6-stage response format from "absolutely right" to "not right at all".
School achievement	Self-reported marks (in the subjects like German, English and Mathematics) of the most recent reports.
Students' perception of teachers' orientation on reference norms	(1) My teachers think a good achievement is if it is better than my result before. (2) The items have been processed using a 6-stage response format from "not right at all" to "absolutely right".

2.4 School achievement

School achievement is measured on self-reported marks (in the subjects like German, English and Mathematics) of the most recent reports. Why reports (instead of standardized tests) and why self-reported (instead of asking the teachers)? First of all, the answer to both of these questions is a pragmatic one: Neither the teachers nor the students should feel overstressed by the process. Second we found hints in existing research which brought us to this decision. See the work of Renkl, et al., and Dickhäuser and Plenter below for further hints.

According to Renkel, et al. (1997), measuring achievement with marks in certain research is a preferred way of measuring students' competences:

> The … achievement was measured with the marks of the end of the school year's report. These might reflect the level of competence in a slightly less "objective" manner than school achievement tests do. On the other hand, marks definitely accord to a bigger economic validity. Not only that they reflect performances made in a school context more directly than tests, they also are the measurement of competences that finally counts officially as basis of evaluation of school achievement. Marks therefore also have a stronger influence on the self-concept than a supposedly objective test-measured level of competence. The most important reason for preferring marks however is that they are explicitly given as feedback on performance, whereas the results of the tests are not open to the students. (Renkl, A., Helmke, A. & Schrader, F. W., 1997, p. 377)

Meanwhile Dickhäuser and Plenter (2005) suggest that students self-reporting of marks provides authentic results:

> Studies in educational psychology often use students' self-reports on their school marks as an indicator of students' performance. In the present study we compared self-reports on marks from the last class test and from the last report in mathematics with the marks as reported by the teacher. There was a strong correlation between self-reported and actual marks, however, students overestimated their marks. The accuracy of the self-report did not depend meaningfully on student's gender, mathematical self-concept and mathematical achievement (as measured by a standardized math test). (Dickhäuser, O. & Plenter, I., 2005, p. 219)

Considering these perspectives provided by existing research, this project measures school achievement on self-reported marks of the most recent reports.

3. The timetable of future activities

In conclusion, the next steps of this research are outlined here. First investigations were already made in July and in October 2008. This initial survey will be followed by cross-section analysis and the publication of the initial findings. In July 2010, there will be the second investigation (a re-test), followed by longitudinal section analysis and the publication of the findings. After that, the implementation of the results into practice will take place, for example via advanced trainings for teachers and via a handbook that will include reports of each of the pilot project-schools and "best practices" examples of successful interventions.

References:

Baumert, J. & Kunter, M. (2006). Professional competencies of teachers. *Zeitschrift für Erziehungswissenschaft, 9*(4), 469-520.

Collani, G. V. & Herzberg, P. Y. (2003). A revised version of the German adaptation of Rosenberg's self-esteem scale. *Zeitschrift für Differentielle und Diagnostische Psychologie, 24*(1), 3-7.

Dickhäuser, O. & Plenter, I. (2005). On the accuracy of self-reported school marks. *Zeitschrift für Pädagogische Psychologie, 19,* 219-224.

Ditton, H. & Arnoldt, B. (2004). Effeciency of students feedback about lessons. In: M. Prenzel, J. Baumert, W. Blum, R. Lehmann, D. Leutner, M. Neubrand, R. Pekrun, H.-G. Rolff, J. Rost & U. Schiefele (Eds.). *Der Bildungsstand der Jugendlichen in Deutschland. Ergebnisse des zweiten internationalen Vergleichs*. Münster: Waxmann, 152-170.

Dresel, M. & Ziegler, A. (2006). Long-term enhancement of academic self-concept and implicit ability theory through computer-based attributional feedback. *Zeitschrift für Pädagogische Psychologie, 20*, 49-63.

Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*. Philadelphia, PA: Psychology Press.

Hartinger, A., Kleickmann, T. & Hawelka, B. (2006). The influence of teachers' conceptions of teaching and learning on the design of lessons and on motivational pupil variables. *Zeitschrift für Erziehungswissenschaft, 9*(1), 110-126.

Kunter, M., Schümer, G., Artelt, C., Baumert, J., Klieme, E., Neubrand, M., Prenzel, M., Schiefele, U., Schneider, W., Stanat, P., Tillmann, K.-J. & Weiß, M. (2003). *Pisa 2000—Dokumentation of research instruments.* Berlin: MPI für Bildungsforschung.

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research, 62*(3), 307-332.

Pauli, C., Reusser, K., Grob, U. & Waldis, M. (2005). Teaching for understanding and/or self-directed learning? A video-based analysis of reform-oriented approaches of mathematics instruction at lower secondary level in Switzerland. Paper presented at *the Annual Meeting of the American Educational Research Association*, Montreal.

Renkl, A., Helmke, A. & Schrader, F.-W. (1997). Achievement in school and self-concept: Universal relations or context-specific correlations? In: F. E. Weinert & A. Helmke. (Eds.). *Entwicklung im Grundschulalter*. Weinheim: Psychologie Verlags Union, 373-384.

Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In: J. Sikula, T. Buttery & E. Guyton. (Eds.). *Handbook of research on teacher education (2nd ed.*). New York: Macmillan, 102-106.

Schöne, C., Dickhäuser, O., Spinath, B. & Stiensmeier-Pelster, J. (2002). *Scales of survey on academic self-concept (SESSKO).* Göttingen: Hogrefe.

Stipek, D. J., Givvin, K. B., Salmon, J. M. & MacGyvers, V. L. (2001). Teachers' beliefs and practices related to mathematics instruction. *Teaching and Teacher Education, 17,* 213-226.

Ziegler, A., Dresel, M., Schober, B. & Stöger, H. (2005). *Compilation of motivational tests for students of the grades five to ten (MTB 5-10): Documentation of scales.* Ulm: Universität.

(Edited by Nicole and Lily)