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Symposium The Delphi Method in Education Research: A Tool for Public Scholarship in Diverse Democracies

Paper 1

The Utility of the Delphi Method to Improve School Success of Students with Migrant Background

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Abstract:

Objectives:

This Delphi study was part of a Swiss inquiry into the development of language competencies of monolingual and multilingual students with a migrant background. Its purpose was to collect information about the effectiveness and feasibility of different interventions aimed at the improvement of cognitive academic language proficiency and school success of such students.

Perspectives:

Because school success highly depends on language competencies in educational language, lower school success of migrant students is linked to lower educational language competencies (cf. for Switzerland: Imdorf, 2004; Kronig, 2003). Isolated interventions by teachers, and how elaborate they might be, contribute little to the improvement of the situation. Coordinated, well-structured interventions in the following contexts appear to be more fruitful: instruction and teaching; institutional structure and characteristics; cooperation with parents and parental participation; diagnostics, selection and transitions; networking; educational policy.

Methods and Data:

Two rounds of surveys were conducted with 176 Swiss, German and Austrian experts (scientists, school administrators and teachers), specialized in the fields of language, education and migration. The Delphi method was used as it combines elements of written surveys and group discussions (Häder, 2002) with respondents encouraged to reconsider their answers in light of other respondents' anonymous feedback, the aim of which is to attain consensus between respondents' judgements. In the first round experts rated the effectiveness and feasibility of 128 selected interventions and could comment on their judgements if they desired. Their answers were analysed with regard to consensus. Expert participants then received feedback on their responses via graphic representations and a short summary of their comments. In the second round they were invited to rate only those interventions which were not answered consensually. Although not all interventions were rated consensually after two rounds, a third round was not realised due to limited time resources of the experts concerned.

Results:

Answers from both rounds were used to group the selected interventions according to the two dimensions of feasibility and effectiveness, and to build four groups of interventions (high / low feasibility x high / low effectiveness). According to experts' judgements the most important interventions are (1) educational interventions, e.g. individualisation, cooperative learning and literacy education; and (2) institutional improvements, e.g. implementation of integrative measures, sustaining both first and second language, and reforming the selection procedures.

Significance:

The present study serves as an example of the use of the Delphi method in education research. For complex research issues which are not easily studied in field research, such as effective measures for dealing with diversity in the classroom, the Delphi method can serve as a good alternative. Besides its utility, methodological challenges and possible limitations will be illustrated and brought up for discussion with international partners in this symposium.

Introduction

This paper describes the *implementation* of the Delphi method (cf. Greatorex & Dexter 2000; Häder 2000, 2002; Hasson et al. 2000; Landeta 2006) in a pre-study that was part of a broader Swiss study aiming at the improvement of school success of multilingual students with migrant background. Detailed descriptions of the method and the results of the Delphi study are to be found in various publications (Rösselet, 2012a, Rösselet, 2012b, Müller & Rösselet, 2010, Müller & Rösselet, 2008).

In order to study the effectiveness of single interventions to improve multilingual students' school success, experimental field studies measuring long-term effects are useful instruments. In a more complex situation, where you aim at comparing the effectiveness of a large body of interventions, a different approach is more promising: the Delphi method.

In the present study experts were asked to rate interventions that are potentially improving academic language proficiency and school success of multilingual students with migrant background on two dimensions: their effectiveness and their feasibility.

Background

Cultural and linguistic diversity has become a reality in many countries – including central and western European countries like Austria, Germany and Switzerland – what is particularly apparent in schools. In Switzerland 25% of the students are multilinguals with migrant background. For many multilingual students school success is restricted, even if they grow up in the immigration country. Some facts from over the last twenty years in Switzerland may illustrate the effects of a seemingly integrative, but effectively assimilative educational system: (a) on primary school-level (7 to 13 years) the quota of multilingual pupils with migrant background in special education was about four times higher compared to Swiss

children (Kronig et al. 2000; Müller 1998). (b) On secondary I-level (13 to 16 years) only 43.4% of the students with migrant background compared to 66.7% of their Swiss colleagues were visiting a school with higher exigencies (BfS 2007; Ryser & von Erlach 2007). (c) While the quota of monolingual non-migrant students attending a gymnasium (or similar schools) had almost doubled over the period of 20 years and reached about 22% in 2000, the quota of bilingual children remained stable at a lower level of about 13.9% (Müller 2001c). (d) Having accomplished compulsory education at an identical secondary I school level does not mean a student will have identical chances to be assigned to a professional apprenticeship or advance to higher education on secondary II-level (17-20 years). For instance, the chance for a monolingual student to advance to the highest exigency level were 80% and for a bilingual student only 65%. On the lowest school level, the chances for a monolingual student were 44% and for a bilingual student about 26% (Bildungsdirektion des Kantons Zürich BID 2007). (e) Considering apprenticeships exigency level (higher vs. lower level apprenticeship), the chances to be assigned to a higher level of apprenticeship were 40.7% for monolingual adolescents but only 27.9% for multilingual adolescents (Müller 2006a).

These facts indicate that cause for differences in school success cannot be reduced to insufficient didactical interventions or to unfavourable family conditions of multilingual children. In scientific publications numerous recommendations aiming at the improvement of multilingual students' cognitive-academic language proficiencies and scholastic success are mentioned. However, long lasting efforts of committed teachers and institutional changes did not considerably change the scholastic success-rate of these pupils (Kronig et al. 2000; Müller 2001a, 2001b). Isolated changes in schools, however elaborate they might be, contribute little to improving the situation. It is more likely that coordinated and well-structured interventions, like FörMig¹ in Germany or QUIMS² in Switzerland, are more fruitful.

Nevertheless, most schools in Germany, Austria and Switzerland are not engaged in an overall program. Often, teachers try to foster pupils' cognitive-academic standard competencies by singular and uncoordinated classroom interventions. This is not to say, that they would not take considerable efforts with their students. However, interventions on a classroom and teaching level alone generally do not improve school success. Usually, more general considerations on the institutional level are excluded from teachers' consideration. For instance, selective processes remain unchanged and the dominance of monolingualism remains unaltered. Also, schools often do not dispose of a particular structure sustaining

¹ FörMig: acronym of Förderung von Kindern und Jugendlichen mit Migrationshintergrund.

² QUIMS: acronym of Qualität in multikulturellen Schulen.
http://www.vsa.zh.ch/internet/bildungsdirektion/vsa/de/schulbetrieb_und_unterricht/qualitaet_multikulturelle_schulen_quims.html

multilingual students in their homework, or sustaining eager and gifted multilingual students to overcome the disadvantage they are facing when their parents cannot support them efficiently in second language acquisition. Another deep seated problem lies in the streaming system. Because of second language difficulties, they find themselves in extremely high proportion in school types with lower level exigencies (e.g. in Germany Hauptschule or in Switzerland Realschule). This is to say that gifted bilingual children are forced to follow basic level streams also in mathematics, natural sciences and foreign language even if they would be able to follow classes with higher level exigencies.

Speaking in a very general manner, structural and institutional issues often impede improvements of bilingual children, adolescents and teachers striving for school success.

Of course, these facts refer to systematic issues. For instance, in Switzerland with four national languages (German, French, Italian, and Rhaeto-Romanic) the so called principle of linguistic territorialism defines the standard of the locally spoken code as the language of selection. Even if the average number of multilingual students in Swiss schools is more than 20% (in some school areas the proportion amounts to over 80%) monolingualism remains the core philosophy of language teaching and at selection. For this reason, most schools, contrary to their assertion to be integrative, are effectively assimilative. Following intergroup-theory (Giles et al. 1977; Tajfel; 1978; Tajfel & Turner 1979; Turner 1982) local language thresholds are not only a product of arbitrary circumstances, but a systematic if not intended issue of an unequal distribution of chances. Established social groups try to define the strength of group boundaries, especially against upwardly mobile competitive minorities, in order to protect educational and economic privileges of their own group, i.e. their children. Thus, they regulate the opportunities to educational institutions which permit the access to higher social and economic position. One means to define the strength of the boundaries is educational language proficiency.

Research Objective

The aim of this study was to identify interventions that enhance language learning and school success of multilingual students. Interventions that are effective will only be implemented if they are also feasible. Therefore the study aimed not only at the effectiveness but also at the feasibility of interventions.

As mentioned before, there are many causes for lower language proficiencies and school success of multilingual students with migrant background. Therefore there are as many different possible interventions that could contribute to improving their situation.

Without assuming to capture them exhaustively, we differentiated six groups of possible intervention areas, calling them contexts:

- C1. Instruction and teaching in classroom
- C2. Scholastic institutional structure and characteristics
- C3. Cooperation with parents and their integration into scholastic decisions concerning their children
- C4. Diagnostics, selection and transitions
- C5. Networking and cooperation between teachers and schools
- C6. Educational policy making and educational philosophy respective to migration.

Delphi Method

In order to learn more about the effectiveness of single interventions, experimental field studies measuring long-term effects are useful instruments. In a more complex situation, where you aim at comparing the effectiveness of a large body of interventions in the mentioned contexts, a different approach is more promising: the Delphi method.

The Delphi method combines elements of written questionnaires (open-ended and closed-ended questions) and group discussions (feedback by others) and can be seen as a highly structured group discussion (cf. Bortz & Döring, 2006: p. 261). Experts answer individually and anonymous a formalised questionnaire, their answers are analysed by computing statistical measures (e.g. means, standard deviations, percentages) and summaries of their answers that are fed back to experts in a next survey round (Häder, 2002, Hasson, Keeney & McKenna, 2000) until a defined stopping criteria is reached.

Delphi studies are used mainly for four reasons (Häder, 2002):

- (1) To aggregate ideas,
- (2) To predict future developments,
- (3) To ascertain expert knowledge and opinions about complex or vague issues and
- (4) To get consensus among experts.

In the present study we chose the Delphi method in order to gather expert knowledge and to reach consensus among experts.

Items:

Experts evaluated in a first round 128 items online. Each item described one intervention from one of the six contexts described above. The interventions were found in scientific literature and/or known from practice and can be applied in school instruction, strategic school planning or on the level of education policy in order to improve language learning and scholastic success of multilingual migrant pupils.

The experts were requested to rate two facets of the interventions:

- (1) Their effectiveness for improving language proficiency and school success and
- (2) Their feasibility/enforceability.

Effectiveness was defined as the expected degree of increase in language proficiency and of higher school success as a result of the proposed intervention. Feasibility was defined as the probability that the proposed intervention could be implemented (depends i. a. on expenses, political situation).

The experts had to evaluate the interventions on a Likert-Scale ranging from 1 to 4 (very low effectiveness/feasibility...very high effectiveness/feasibility). In addition, explanatory statements were required. Furthermore, the experts were asked to add interventions they would consider important, but were not taken into account in the initial list of interventions.

In the second round, 46 items and arguments that did not obtain sufficient consensus in the first round were (slightly) adapted following the arguments of the experts and sent back to the experts for a second rating.

Experts were given feedback by reporting means of the ratings, distributions (bar charts) and a summary of the comments to the items.

This iterative method aimed at reaching higher consensus between the experts' rating of the effectiveness and feasibility of the particular interventions.

Sample:

The sample included a panel of 176 out of 441 contacted experts in the fields of language education and migration from Germany (69), Austria (15), Liechtenstein (1), Luxembourg (1) and Switzerland (89) working in this field as scientists (87), teachers (59) and school administrators (29) (others:1).

Stopping criteria:

Consensus between experts was used as stopping criteria. In order to decide if there is a consensus or a dissent between the experts' judgements, two criteria were used: (1) the percentage of answers in two adjacent response categories should reach a critical level of 80% and (2) a critical ratio "c" calculated by comparing the empirical variance and the possible maximal variance of the experts' judgements:

$$c = 1 - \frac{\sum_{i=1}^n (y_i - \bar{y}_{emp})^2}{n(y_{max} - \bar{y}_{theoret})^2} \geq 0.75$$

where y_i = value of an individual experts judgement,

y_{emp} = mean of experts' judgements,

y_{max} = theoretic maximum of the judgement (using a likert sale ranging from 1 to 4 y_{max} =4) and

y_{theoret} = theoretic mean of the judgements (using a likert scale ranging from 1 to 4 the $y_{\text{theoret}}=2.5$).

Items with $c \geq 0.75$ are defined to have reached consensus (less than 25% of the maximal possible variance).

Results

In order to reduce the great number of singular interventions and to have them clearly sorted in groups with similar contents, factor analyses (VARIMAX-model) were conducted on the basis of the rated effectiveness. The factor analyses comprehended a total of the 128 interventions, i.e. the 82 interventions which reached consensus in the first round of the survey and the 46 interventions reaching consensus in the second round. A total of 36 thematic groups of interventions resulted from these factor analyses.

The 36 groups of interventions are reordered according to the two dimensions. (1) Attributed effectiveness and (2) attributed feasibility, which resulted in four quadrants as shown in fig. 1. In order to determine if an intervention group can be considered effective and/or feasible, a statistical measure was used: intervention groups ranging 0.5 standard deviation or more over the mean of the total of interventions were considered effective and/or feasible. Obviously, this criterion is arbitrary. However, the rigour of the criteria helps to separate clearly (in-) effective or clearly (in-) feasible recommendations from those ranging in the centre and thus expressing a kind of undecidedness of the experts.

The intervention groups were then ordered by their effectiveness and feasibility in order to differentiate between 4 types of interventions: effective and feasible interventions (I), effective but hardly feasible interventions (II), non-effective but feasible interventions (IV) and non-effective and hardly feasible interventions (III, fig. 1).

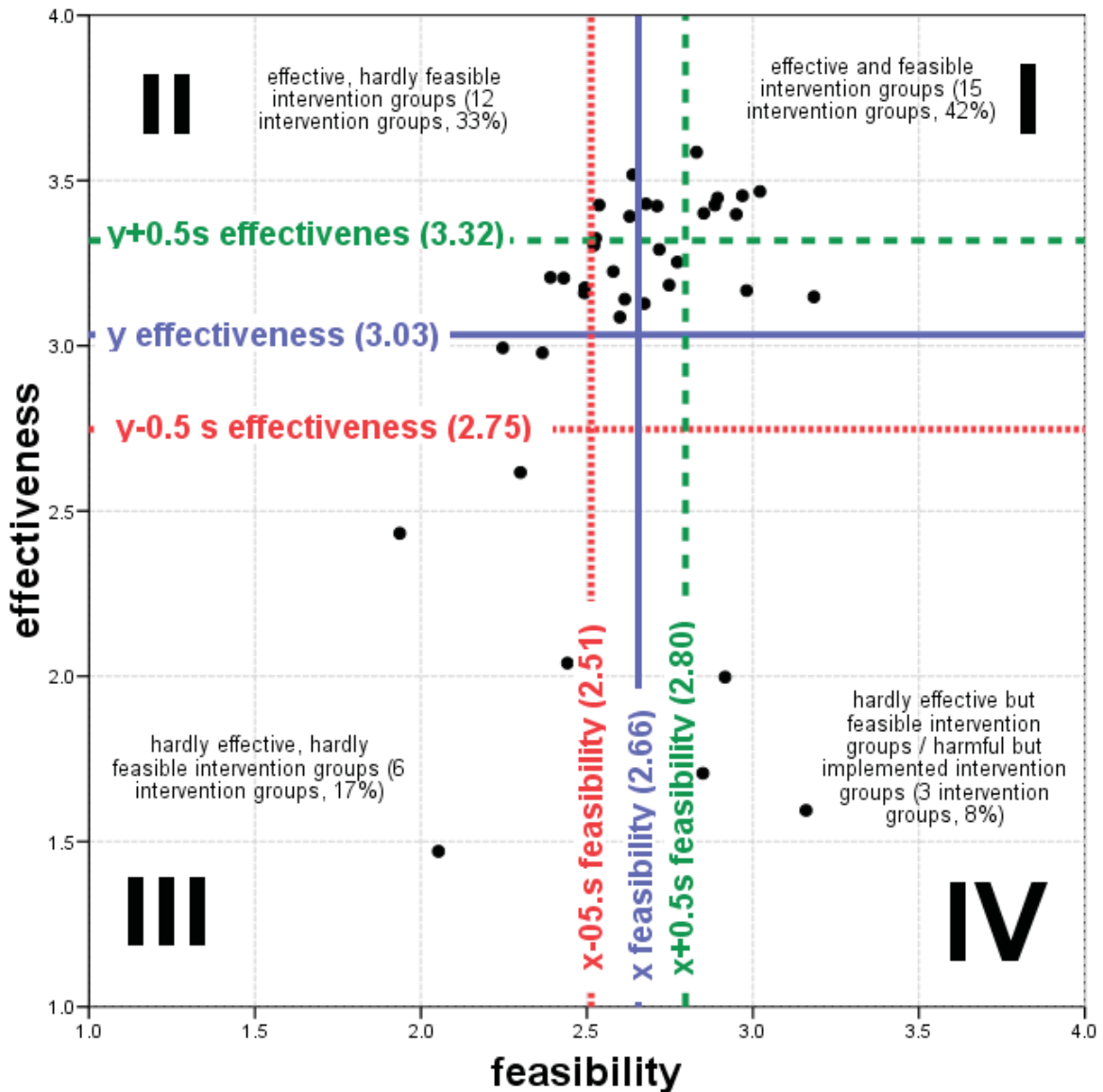


Fig 1: Mean of effectiveness and feasibility of 36 intervention groups

The study resulted in a list of intervention-groups ordered after their efficiency regarding the enhancement of successful language learning and school success of multilingual students.

Three questions have been answered by the collected data:

- (1) Is there a correlation between the effectiveness and the feasibility of the evaluated interventions? Are, for example, the most effective also the most feasible interventions?
- (2) Which intervention groups are
 - (a) both highly effective and feasible
 - (b) effective but not feasible
 - (c) both ineffective and not feasible
 - (d) not effective (or even harmful) but feasible (or already implemented)

for language learning and scholastic success of multilingual students?

(3) Do the experts differ in their judgements of effectiveness and feasibility of the interventions depending on their principal occupations, country and sex?

Significance

Cultural and linguistic diversity of students constitutes a challenge for schools at present and in near future. The encouragement and fostering of language proficiencies and school success of multilingual students with migrant background is an important issue to reduce social inequality. The findings of this study provide an overview of interventions considered to be effective and feasible by experts to improve academic language proficiency and school success of multilingual students with migrant background. The identification and differentiation of interventions by their effectiveness and feasibility serve as useful foundation for the planning and implementation of intervention programs. This is particularly important, as programs that involve interventions on different levels like instruction and teaching, institutional structure and characteristics of schools, cooperation with parents, diagnostics, selection and transitions, networking and cooperation between teachers and schools and last but not least educational policy making are most promising.

For the present purpose, the use of the Delphi method has been proven to be fruitful as it allowed evaluating a great number of interventions at the same time by experts from different fields and different countries. Obviously, research findings obtained by using the Delphi method are not strictly objective. They are based on subjective opinions and individual expertise of the sampled population. Therefore it is very important to carefully draw a sample of experts that suit your research goals. Future studies using the Delphi method in the field of school development and diversity should include experts from different countries. The broader the empirical, theoretical and practical knowledge of the experts, the more differentiated the answers and the more intensive the discussion. Even though the present study was conducted only with experts from German speaking countries, we assume that the used approach and the definition of consensus can be transferred to answer research questions in other research fields all over the world.

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