

## Forschungsprojekt

# Change and continuity in subject-specific educational contexts:<sup>1</sup> Research report of an interdisciplinary project group at the University of Bremen

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Die FaBiT (Fachbezogene Bildungsprozesse in Transformation)-Projektgruppe besteht aus sechs Fachdidaktikerinnen und Fachdidaktikern der Fächer Englisch, Französisch, Kunst, Mathematik, Musik und Spanisch<sup>9</sup> an der Universität Bremen. Die vom Zentrum für Lehrerbildung anteilig koordinierte Gruppe arbeitet seit zwei Jahren zusammen und hat in dieser Zeit diverse Verfahren um externe und interne Mitteleinwerbung durchlaufen. Im Juni 2014 wurde die Projektgruppe in einem kompetitiven Verfahren als *Creative Unit* an der Universität Bremen eingerichtet. *Creative Units*

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  - 9 Der Anteil der fremdsprachendidaktischen Disziplinen im Forschungsverbund liegt damit bei 50% (siehe Teilprojekte 3.2-3.4); im folgenden Beitrag werden auch die anderen Teilprojekte (Mathematik, Kunst, Musik) dargestellt, um die Gesamtheit der Breite des interdisziplinären Forschungsverbundes zu illustrieren. Letztere bieten zwar Anschlussmöglichkeiten an, aber keine Kerninhalte fremdsprachendidaktischer Forschung.

sind mit einem Höchstmaß an Freiheit (auch bezüglich der Mittelverwendung) ausgestattete interdisziplinäre Forschungsverbände, die gemeinsam neue Forschungsgebiete entwickeln.<sup>10</sup>

In der *Creative Unit* 'Fachbezogene Bildungsprozesse in Transformation' (Universität Bremen 2014) werden in sechs Teilprojekten basierend auf dem methodologischen Ansatz *Design-Based Research*-Lernumgebungen entwickelt bzw. Lehrerhandeln erforscht. Das Hauptinteresse gilt der Erforschung und Mitgestaltung von Wandel in fachbezogenen Bildungsprozessen, d.h. der Analyse, Initiierung, Steuerung und mittelfristigen Verankerung von fachbezogenen Lehr-/Lernprozessen im Klassenzimmer unter veränderten Rahmenbedingungen (z.B. strukturelle Veränderungen des Schulsystems, gemeinsame Beschulung verstärkt heterogener Lerngruppen). In den Fokus genommen werden dabei zunächst fachbezogene Perspektiven, die kontinuierlich in einer interdisziplinären Zusammenschau zu einer umfassenden Theorie des Wandels verdichtet werden sollen. Ein besonderes Anliegen dieser Gruppe ist die Einheit von Forschung und Lehre in der wissenschaftlichen Lehrerbildung, d.h. die enge Verschränkung von Theorie und Praxis insbesondere in der ersten Phase der Lehrerausbildung sowie im Rahmen einer fachdidaktischen Promotion.

## 1. The FaBIT-project group: Members and activities to date

The interdisciplinary project group FaBIT (*Fachbezogene Bildungsprozesse in Transformation*) consists of six members from subject-specific educational disciplines (*Fachdidaktiken*) in Arts, English, French, Maths, Music and Spanish, who came together in the summer of 2012 as a result of an invitation for tenders from the *Stifterverband der Deutschen Wissenschaft (Die Lehrerinitiative)*. The concept developed by the group had the aim of establishing Design-Based Research projects (Akker van den, et al. 2006, Komorek & Prediger 2013) in order to combine theory and practice into teacher education. The proposed establishment of a combined graduate programme called *Duale Promotion* (a combination of the second phase of teacher training and a subject-specific doctoral project) was a key element in the application with which the University of Bremen was selected for the final round of the last six applicants.

This interdisciplinary cooperation during the preparation of the application was seen by the group members as very enriching, also with regard to their own work as researchers and teachers within their respective disciplines.

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10 Eingerichtet werden an der Universität Bremen insgesamt sechs *Creative Units*, mit denen die Universität "die Fähigkeit sichert, sich auch jenseits der Profildomänen zu erneuern" (Universität Bremen 2013). Das Format wird pro Förderung für eine Laufzeit von drei Jahren aus Mitteln der Exzellenzinitiative mit einem Volumen von ca. 750.000 Euro ausgestattet.

In this way, the group (made up of representatives of the humanities and one mathematician) continued their joint work and refined their research approach. An international and interdisciplinary symposium was organized by the group in October 2013; since then, the subject-specific research and design of learning processes in heterogeneous learner groups and the necessary teacher competencies were given greater emphasis. This research approach has already been implemented into the teacher education curriculum at Bremen University. Since the winter semester 2013/14, the group has set up an interdisciplinary master's colloquium which students can use to help write their thesis using the methodological approach Design-Based Research. More cross-disciplinary initiatives that contribute to the improvement of quality in teaching and learning are in the process of being implemented. New activities planned for the academic year 2014/15 are externally funded by a new program (*Nah dran!*) supported by the *Stifterverband der Deutschen Wissenschaft* and the *Vodafone Stiftung*.<sup>11</sup>

During the recent application stage for internal funding in the context of the Excellence Initiative<sup>12</sup> at the University of Bremen, the group members' own preliminary work in the individual projects was intensified and the interdisciplinary research perspective strengthened. The group was successful with this application and as a result was established as one of six *Creative Units* at the University of Bremen for a duration of three years.<sup>13</sup> The combined graduate programme *Duale Promotion* remains a key milestone of the project group, with the dual objective of the close link between theory and practice in teacher education and the simultaneous targeted promotion of young academics in teacher education.<sup>14</sup>

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11 For more information see Stifterverband (2014).

12 The Excellence Initiative is a line funded by the German Research Foundation and the German Council of Science and Humanities. It is intended to "strengthen Germany as a location of excellent science and humanities, to enhance its international competitiveness, and to increase the visibility of top-level universities and research areas" (Wissenschaftsrat 2012).

13 For more information see <http://www.uni-bremen.de/cu-fabit> (13.12.2014). *Creative Units* are groups of researchers who join together to mutually pursue the development of new lines of research. These groups also enable the university to regenerate in segments outside its high-profile research areas (for more information see Universität Bremen 2013).

14 The combined graduate program *Duale Promotion* which concludes with a doctorate (Ph.D., Dr. rer. nat. respectively) and the second state examination, is carried out with the study seminar (state training phase). By using the methodological approach of Design-Based Research in the doctorates (see below for more detail), content networks have arisen targeted at preparation competences, especially skills for the academic-based independent evaluation of learning processes and any resulting consequences on lesson design. Organizationally, the dual doctoral students will be part of a graduate school. Thus, a temporal and structural framework will be created in order to prevent excessive demands on the dual doctoral students.

## 2. Research questions and background

"Change in education is easy to propose, hard to implement, and extraordinarily difficult to sustain" (Hargreaves & Fink 2006: 1). With this quotation in mind, the FaBiT-project group aims at investigating 'change in education' from a subject-specific angle with the aim of finding out how change in educational contexts can be initiated and sustained so that it becomes a feasible and beneficial experience for the individual learner and teacher in the classroom. Within the interdisciplinary group, our key question "How does educational change happen and how can we make it happen?" is explored using a subject-specific (*fachdidaktischer*) focus; the latter being inextricably linked to the individual teacher, their attitude and decisions with regard to what, how and why to teach. In six sub-projects, it is investigated how teachers and learners in the classroom perceive, handle and reflect on new major challenges from outside and inside the classroom through adapting or persisting. Some of these processes might be similar in Maths, English, French, Spanish, Art or Music, others might differ substantially. In order to pursue these questions, widely-discussed impulses from the pedagogical level are taken into account; yet the focus remains on the subject-specific level. Until now, the latter has only played a minor role in the public as well as academic discourse on educational reforms; this being especially true for the humanities.

The immense external pressure for reform which demands changes in the classroom can be briefly described in the following three steps (A-C):

- A) The requirements to provide education (also in the sense of appropriate subject-specific designs) in schools have greatly changed in recent years due to educational reforms and socio-political developments.

The most important socio-political developments include:

- The huge increase in the number of children and young people who speak a language other than German at home, with German being the dominant language in schools. In Bremen these children are the majority in the current primary school year according to the 2012 education report (Senatorin 2012a).
- The integration of people from different sociocultural backgrounds as the key social challenge. Of course this affects pupils with and without a so-called 'migration background' who are all interacting within a huge number of diverse sociocultural environments.

- The strong connection in Germany between social background and educational success which was made obvious in the PISA-study (for more information see OECD 2014). This correlation is particularly evident in Bremen (Senatorin 2012a).

Two of the most noticeable federal trends in this context are: the dissolving of the three-tier school system into a two-tier one<sup>15</sup> and the separation of final school qualifications from the type of school.

These tendencies are particularly evident in the Bremen education system; especially with the introduction of the *Oberschule* in 2009/10 in which the city state combined all these federal trends of educational reform. In addition, Bremen was one of the first federal states to have decided in favour of the comprehensive introduction of inclusion. Bremen thus offers an overlap between the described social developments and the educational reforms and provides a particularly suitable environment to address our research questions.

- B) Previous teaching concepts are no longer suitable to address these changes.

The previously mentioned developments have led to children and young people, who differ greatly according to their linguistic, cultural and attainment levels, now being in one classroom. Heterogeneity has thereby become more evident; yet to date effective subject-specific concepts to deal with heterogeneous learning groups have been lacking. As a consequence:

- C) Educational experts with a subject-specific focus (*Fachdidaktiker*) have to take on the responsibility of initiating and accompanying these processes of change in research as well as in teacher training.

Dealing with the growing differences among pupils has until now been mainly discussed and researched in the field of education. In addition and for the majority of learners the production of subject-specific teaching and learning designs is more urgent. These require changes on two levels: changes on the micro-level (i.e. the classroom) as well as on the nano-level (i.e. the individual

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15 This development can be observed with varying degrees and speeds of progression in the various German states, yet there are similar tendencies in all of them. Whereas Bremen, for example, has created an *Oberschule* (the only existing secondary school type alongside the *Gymnasium*/grammar school, see Senatorin 2012b) where all final school qualifications within the German system can be obtained, Bavaria has – at least formally – transformed the former *Hauptschule* and *Realschule* into a new school type called *Mittelschule* (middle school, see Bayerisches Staatsministerium 2014).

learner), for which subject-specific educational (*fachdidaktische*) perspectives need to be taken into account. Thus, we have extended our starting question: "How does change happen?" (see above) into "How does change happen and how can we make it happen?" To answer these questions we need to understand

- when, how and why educational change works or does not work,
- how learning takes place in these changed conditions, i.e. how we can initiate and sustain successful learning processes. Only from this basis can we identify

what type of teaching approaches are necessary and how they can be implemented.

### **3. Common methodological approach and framework**

All sub-projects start with the assumption that only theory provides the means to gain a better understanding of context-sensitive requirements for teaching and learning, hence, improve practice beyond the local settings. In addition, they share the vision that educational design for teaching needs theory to be successful in practice, and educational theory must be based on the practical needs of the teaching and learning in school to be relevant and meaningful. Thus, the six sub-projects aim at research that mutually benefits theory and practice. This can be achieved through the methodological approach of Design-Based Research that produces both an empirically grounded local theory on subject-specific teaching and learning and a prototypical teaching design for which the local theory is made.

The starting point of each of the six sub-projects is a tangible problem in Bremen schools. Each sub-project is structured according to the four steps of the cyclic model of Design-Based Research and situated within a common framework (see figure 1). Within Design-Based Research, theory-driven hypotheses regarding a specific problem are investigated by teaching experiments in the following cyclic procedure: Based on a need for action a research problem is specified (step 1). A teaching design is produced as a suggested solution which is tried and tested. In various cycles of design and redesign (steps 2 and 3), the original concept as well as the starting theoretical hypotheses are reassessed. The goal is to produce a prototypical design with a subject-specific teaching/learning theory (step 4) that should work for the situa-

tion in which it has been developed. At the same time it claims to also work as a pattern prototype in similar situations. Thus, each of the six FaBiT sub-projects will contribute to educational design research with a specific focus on creating subject-specific (*fachdidaktische*) theories on learning and teaching processes.<sup>16</sup>

Whereas research within the sub-projects is situated on the nano-level of the individual learner and the micro-level of subject-specific classroom interactions, the common framework of the FaBiT sub-projects consists of three levels, indicated in figure 1 as the supra-, the macro- and the meso-level. The previously mentioned PISA-study stands for the supra-level; particularly significant on the macro-level for our projects is the educational reform in Bremen with key elements such as the introduction of a two-tier school system, inclusion and all-day schools which are exemplary in the current nationwide and international developments. The implementation of the reform policy guidelines into the school curricula at the meso-level – e.g. in the form of individualized or cross-curricular teaching – determines the narrower framework for our sub-projects.

The common structure and organization of the projects as well as their identical situational framework of the Bremen school system on the meso-level allow for a fundamental comparison of the sub-projects. One of the main research tasks of the Creative Unit is to relate and possibly link the developed subject-specific design principles and local theories (see Bikner-Ahsbals et al. 2014) in an interdisciplinary way. Comparison dimensions which have already been alluded to are aspects of teaching and learning about culture in the Music, Art and English projects and the task-specific, relevant and differentiated support features in particular in the French, Spanish and Mathematics projects.

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16 In contrast to Action Research, theory building on teaching and learning is an essential part of Design-Based Research.

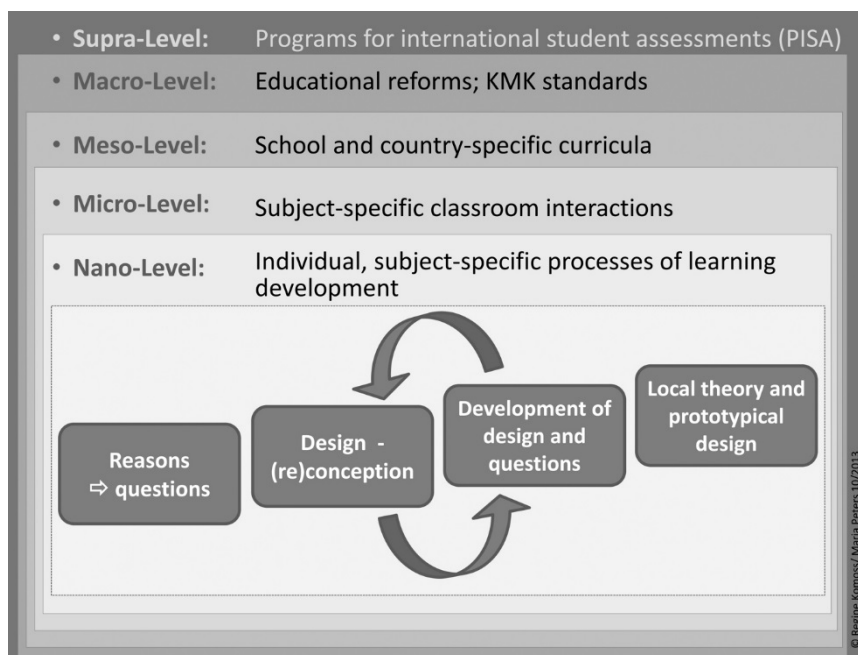


Figure 1: Common framework of the FaBiT-sub-projects (including four steps of the cyclic model of Design-Based Research)

## 4. The FaBit sub-projects

The work of the project group will now be illustrated by short descriptions of the six sub-projects which are all structured according to the following aspects: topic, reason(s), central question(s), expected results and interdisciplinary approaches.

### 4.1 Mathematics (Angelika Bikner-Ahsbabs)

The topic of this sub-project is the change in functional understanding at the transition from secondary to advanced secondary education in Mathematics: In lower secondary this understanding is separated into different types of functions such as linear, quadratic, or exponential functions; at the input stage



of the advanced level these types must merge into one more generalized concept.

The reasons for the sub-project are the increase in heterogeneity in the pupil body and the problem of necessary conceptual change of functions in the transition from one system level of education to the next one. This problem increases when feeder schools are more aligned to behavioural practices with functions (e.g. utility-orientation) than to conceptual understanding. Since not every secondary school has an advanced level and pupils come from different feeder schools, many learners are not adequately prepared for this level.

The central question of the project is: How can this change in functional understanding be successfully designed and sustained? Where do the problems lie in this phase? Starting from these questions, a hypotheses-supported design will be carried out in cycles and developed iteratively along with a teaching-learning theory. The final step is to check to what extent the learning design solves the initial problem to identify and specify the scope of the theory developed.

The expected result is a prototypical design for the transformation of the functional understanding at the beginners' stage of advanced level mathematics. A local theory of this transformation will assist Mathematics teachers to comprehend how this understanding of functions changes, what conditions foster or hinder it and how they can adapt their support actions to learner prerequisites.

Within the interdisciplinary comparison, the question will be examined of how subject-specific transformations in the context of learning processes take place and what aspects of the teaching-learning design promote or hinder them. Interdisciplinary networking approaches are expected to be particularly successful with regard to the following two sub-projects:

- French, concerning dimensions: methodology (steps for task design, videography in the laboratory, artefact analysis), task design (support system for designed tasks), change (transition from a fragmented idiosyncratic understanding to a generalized understanding);
- Arts, concerning dimensions: methodology (artefact analysis and learners' traces therein), epistemic processes (contrasting epistemic specificities in maths and arts), change (of the epistemic practices).

## **4.2 French (Andreas Grünewald)**

The topic of this sub-project is the design and use of support services (in the sense of scaffolding methods such as lexical hints, part translations, use of dictionaries, visualisation, media processing, hints for reading strategies, hints for word analysis etc.) with the aim of promoting the learning process in the foreign language (French). Scaffolding methods are structured learning support services that are graduated in terms of learners' language competence.

The reason for this sub-project is the requirement to create subject-specific teaching designs for performance-heterogeneous groups as they are found in secondary schools, especially in Bremen. The project focuses on the design of differentiated and individualized learning styles for secondary level learners.

The central question of this sub-project is how support systems must be designed in French in order to promote reading processes in heterogeneous learner groups. In the design cycle, scaffolding methods are created with special consideration of the individual support needs of a particular user. It will be examined which scaffolding methods learners use and which they do not, and if they do, how learners are helped by them in their language learning process.

The expected results are, firstly, a concept tried and tested in several cycles in the form of a differentiated scaffolding method using tasks in the field of text reception. Secondly, a local theory will be developed, whether or how learners structure their language learning appropriately for themselves and if necessary what support offers they fall back on and for what reason.

The overriding questions in this sub-project which will also be examined in the interdisciplinary comparison are: What consequences does this have on the teacher's actions? Are the subject-specific findings transferable to other disciplines to enhance, for example, students' functional understanding in Maths? And ultimately it should be asked, which aspects of applying the scaffolding method promote or hinder a transformation in the learning process.

## **4.3 Spanish (Bàrbara Roviró)**

The focus of this sub-project is the criteria-led evaluation of oral language comprehension of Spanish learners in terms of oral classwork in the teaching of Spanish.

The reason for this sub-project lies in the following problem: Currently, oral communication tests in a second foreign language are introduced as a fixed part of a student's performance report nationwide. In Bremen, teachers currently face the challenge of developing students' language skills in performance heterogeneous and multilingual classrooms and thereby preparing them for the oral exams. At the same time adequate test formats with applicable and operable assessment criteria have to be designed. The required criteria must meet the practical requirements of the examination procedure and they should also provide learners with a concrete learning process promoting positive feedback. In this way, it can be assumed that differentiated feedback from the teacher on language performance tests can have a positive influence on the teaching and learning processes (backwash effect). Similar to the structures in writing, it will be necessary to carry out preparatory oral tasks to formulate the test tasks precisely and present the evaluation criteria in a transparent way.

This project explores the questions of how teachers in informal oral test tasks can give students individually differentiated feedback on their language skills and to what extent the evaluation of different performance levels criteria can contribute to the promotion of oral language competence.

The main result of this sub-project will be to design and test a range of performance evaluation criteria in the context of oral communication tests in Spanish classes. Taking into consideration existing or newly-designed tasks, focusing on the promotion and evaluating oral language skills in Spanish classes, differentiated feedback and an evaluation grid pattern will be compiled and systematized.

Interdisciplinary connections are expected primarily with the sub-projects in other foreign languages, e.g. with regard to the conception of oral class work, the development of detailed evaluation criteria and the preparation of learning tasks to promote oral language skills. Moreover, the transfer of the findings of this study into learning processes in other participating subjects is possible. This transferability refers to oral performance assessment models, associated evaluation criteria and effects of teacher feedback on the learning process.

#### **4.4 English (Sabine Doff)**

The focus of this sub-project is the implementation of the change from inter- to transcultural learning in terms of English teaching design.

The sub-project is based on the following problem: The cultural reality for a growing number of students is becoming increasingly complex; life in different cultural spaces is part of their everyday lives. The teaching of English has not sufficiently addressed this reality to date: so many curricula and textbooks often use an unreflective concept of intercultural learning that is based on the contrastive approach to the 'own' and 'foreign' culture and does not go (far) beyond (cf. Doff & Schulze-Engler 2011). The challenge is to develop suitable (i.e., goal-oriented and feasible) teaching concepts for cultural learning in English teaching and testing which incorporate the daily reality of a growing number of students, to deal with the teaching of English in schools and students' cultural diversity, as well as to reconstruct the current discourse in cultural studies.

The sub-project English explores the question of how the fundamental transformation from intercultural to transcultural learning can be effectively integrated into English language teaching (i.e., necessary for transcultural learning), in the form of design (objectives, materials and tasks formats) which is part of the fundamental components of learning and teaching about culture in addition to language learning.

A result of the sub-project will be the development and testing of exemplary designs (for secondary levels I and II) to promote transcultural learning in English teaching (in terms of learning objectives, materials and task formats). The overall objective is to reflect the cultural and linguistic diversity of learners which is critical in achieving an academic approach to teaching English in order to try to make these dimensions of learner heterogeneity useable as a resource for cultural learning. It is expected that through the development and testing of these designs, a more comprehensive understanding of how transcultural learning takes place in English teaching can be achieved and how these processes can be promoted. These findings should be tied back to an expanded didactic theory of cultural learning in (English) language teaching.

Interdisciplinary networking approaches include a priori part of the sub-project Art (artefact analysis: 'learning-/learner tracks' in learners' products) as well as the sub-project French (principles of TBL and scaffolding design).

#### **4.5 Music (Andreas Lehmann-Wermser)**

The focus of the sub-project is the change in the cultural background of students in secondary schools. As all music teaching and learning builds on

the process of assigning meaning, any change in the way this takes place affects classroom processes. Students' cultural backgrounds have become much more diverse in the last few decades. Two characteristics mark this development. Students from non-German origins constitute a large portion in Bremen's schools. In addition, a rather uniform understanding of 'legitimate culture' has been replaced by broader and multi-faceted orientations in popular and classical music.

The reason for this project lies in the observable disregard for the processes of assigning meaning within classroom settings, and especially in practical lessons (*Instrumentalklassen*). Music teaching in these settings consisting of repeated cycles of playing and commenting, is communicating technical feedback. Only on a superficial level this happens 'culturally fair' in the sense that it seems to be detached from meaning. However, all processes mentioned are embedded into a complex (and changing) field of understanding and assigning meaning where a student's cultural background and experience gained earlier in life make a difference.

The central question is how teachers can structure processes of understanding in lessons with a high degree of practical 'musicking', a term coined by Christopher Small (1998) to stress the aspect of the process rather than the product. There is little research on how teachers implicitly or explicitly initiate understanding while musicking through 'patterns of staging' (*Inszenierungsmuster*). How can they foster a deeper understanding of cultural dimensions within practical lessons on the students' side? How can relevant questions be addressed to make hidden mechanisms of assigning meaning explicit? In order to reach this goal, music lessons will be videotaped. Special attention will be given to episodes where sequences of assignment can be observed.

Results are expected on two different levels. Firstly the actions taken by teachers that initiate deep thinking and a heightened awareness of cultural dimensions will be identified, described in detail, and improved. Secondly, the very process of a teacher observing their own teaching, analysing it with defined foci, is expected to change the understanding of teaching music where goals and competencies are often ill-defined and of minor importance for the teacher's behaviour in the classroom.

Besides a common theoretical framework, the problems of changing cultural frames of reference are relevant to the sub-projects in English and Art Education. There are also methodological connections with the sub-project in French where videography is also used; the complex questions of coding data will be approached jointly.

## 4.6 Arts (Maria Peters)

The theme of this sub-project is the promotion of visual expression and reflection skills in pupils' artistic and research-based learning processes.

Art educational research shows that students are generally solely fixed on the artistic product being created and not on the actual process of production. They have difficulty documenting, reflecting on and presenting their own formation of ideas and design process. It is therefore necessary to develop new methods for process visualisation and process reflection in art teaching which are suited to the pupils' biographical and culturally-diverse learning requirements. For the development of learning arrangements in art teaching, artistic concepts and visual knowledge methods from the field of Artistic Research should be used.

The sub-project art will examine the question of how students become able to think in images and with what knowledge students visualise, reflect and present their individual and collaborative artistic research process. A special focus lies on the experimental fabrication of text-image designs and the promotion of a reflected, spoken expression ability (e.g. artistic process books, graphic images structure and multimedia productions).

Against the background of a changing learning culture (macro-level), a teaching design on the level of objectives, materials, tasks and feedback formats (micro-level) will be developed. The effect of the design on the learner artifacts, i.e. the results of individual and collaborative visualisation processes, based on specific indicators, will be examined in more detail (nano-level).

Expected results are exemplary designs and a local theory to promote visual expression and reflection skills in artistic and research-based learning processes of students (secondary levels I + II). Based on the investigation of learner artifacts, a change in the use of pupils' artistic methods for process visualisation should become clear. It is expected that learners acquire a problem-oriented awareness in collecting, selecting and editing images and material; that they generate strategies to develop and implement creative ideas and acquire competences for the communicative assessment of their own and others' points of view and perspectives.

Interdisciplinary connections are expected in particular with regard to the following sub-projects and dimensions:

- English: artifact analysis ('learning-/learner traces' in learners' products)

- Mathematics: knowledge-led behavioral practices of structuring and ordering in collection phases; visualisation of perceptions and reflections through structural and graphic images.

## **5. Interdisciplinary perspectives and expected results**

Within the interdisciplinary comparison, the question will be examined how subject-specific transformations in the context of learning processes take place and what aspects of the teaching-learning design promote or hinder them. The comparison between the sub-projects is made possible since all of them focus on individual and social learning processes, and use comparable methods of data collection (such as an experiment in a laboratory setting, videography, interviews, the analysis of student products and the transfer to a classroom-setting). In all sub-projects heterogeneous learning prerequisites will be explored in tasked-based settings. The expected results and theories will differ, yet overall they will provide a database for conditions of change to be analysed comparatively from an interdisciplinary angle within the disciplines involved and beyond.

From a mid-term perspective, the project group aims at the implementation of an interdisciplinary subject-specific research approach to education and teaching development which combines basic and applied research in the sense of 'use-inspired basic-research'. In particular, through the use of the international approach Design-Based Research, the group is currently working on establishing an international research network at the University of Bremen. Together with national and international partners, the group will process and collect a substantial body of control-related, evidence-based knowledge of school- and lesson development. The group will focus on understanding and initiating change in subject-specific educational contexts which can be used equally in the contexts of ongoing school reform in Bremen and beyond, as well as in teacher training.

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