4.8 Reengineering An Undergraduate Program through a Competence-based Curriculum (CBC)

(Bogor Agricultural University – Indonesia Case)

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Background

University as an agent of change should play an important role almost in every country. In order to produce good human resources quality, a university as a higher education institution has to carry out some actions on teaching, conducting research and service to the community in good systems. The systems form the preconditions and define action space for academics' work and perhaps for their norms and values (Kogan *et al.*, 2000). They also stated that by increasing authority of higher education institutions, various forms of pressure upon the institutions to become more autonomous would allow the institutions to play new roles and functions as public institutions and academic organizations in the higher education system. Moreover, the elements of accountability and external control of efficiency and quality, and also the expectations of more pronounced and evident institutional leadership and management will give the opportunity to the institutions to be more careful in handling and running the academic activities.

Bogor Agriculture University (IPB) is one of the biggest universities in Indonesia, which has core competence in agriculture. In 2000 it was declared to be independent and became a university as a legal entity, with autonomy in education management and external affairs. To be an autonomous campus, IPB has some tasks to implement the new strategies related to governance improvement, educational programs, research and community service activities, fund rising and infrastructure improvement.

There should be a strategy to address educational development programs: (1) highly specialized undergraduate study program which does not match the demands of the job market, (2) competition of resources utilization as well as staff, (3) uneven distribution of academic loads among the staff. The issue of the quality of graduates is supported also by information from the job market. According to the tracer study carried out by IPB, the job market nowadays need graduates with more **general competences.** It means that the content of the curricula needs broader **knowledge, with more practice but less specialization**. From a scientific point of view, the education system should not be separated from the labor market. The education program is not merely a matter of transferring a theoretical knowledge, but mostly in encouraging people to learn. This should be carried out in a dynamic structure. In other words, the reengineering of curriculum in each study program is necessary.

Nowadays there are 38 study programs at undergraduate level which implement National Curricula based on Decree of 056/U/1994. This Decree contains 60% of national curriculum determined by Directorate General of Higher Education and 40% institutional curricula. To accommodate institutional curricula, there are many elective subjects which have been established. This points to a specialization indicating the characteristics of a study program. The idea is to characterize the study program itself. Consequently, overlapping of the material among the subjects causes inefficient university management cost, due to the repetition of the topics, staff load and facilities usages.

In line with the job market needs, the Ministry of National Education published Decree No. 232/U/2000, stating that the education system has to change from content-based curriculum to competence-based curriculum.

In other words, competency is the specifications of knowledge and skill and the application of that knowledge and skill to the standards of performance required in the workplace. It means that the students have to learn in order to have personal competences as well as professional competences, reflected in a curriculum design. Therefore, the curriculum improvement is necessary to meet the requirement of the job market. Consequently, the improvement is not merely in grouping the subjects but also in designing curricula, which will make it more convenient for the staff to do the tasks, more freedom for the students to choose the competences, more efficient for the university to manage the education programs.

Existing Curriculum Conditions

There are 38 study programs at IPB presently, covered in 8 faculties, which implement the education system through semester credits unit (scu) systems. Basic principles of existing curriculum are in the National Curriculum (Decree 056/U/1994) which has two components i.e., core curriculum which is a group of subjects in a study program applied nationally, and institutional curriculum is a group of subjects indicating the characteristics of university. The subjects are classified into compulsory and electives subjects. The core curriculum has to involve a group:

(1) General subjects (10-20%) support the development of personality and attitude as graduate resources to live in the community,

(2) Basic specialization subjects (30-50%) provide basic specific specialty to be a professional or science and technological developer.

(3) Specialization subjects (30-60%) provide the knowledge and skills to solve problems with suitable scientific methodology in certain fields.

Minimum total credits for IPB's graduate is 144 credits that can be finished in normally 8 semesters. The core national curriculum consists of at least 75 credits that are 10 credits of general subjects, 29 credits of basic specialization subjects and 36 general

specialization subjects, and the rest is local (institutions) curriculum which designed by each study program under faculty coordinations (Anonymous, 1997). The institutional curriculum can also have both compulsory and elective subjects. Regarding with the institution curriculum for graduate specialization, many study programs have offered many subjects as an elective subjects with the range of 7 to 25 subjects. The total number of subjects offered to the students is 49 to 75 subjects in each study program.

Sudirman (2002) stated that according to the result of the IPB Autonomy Preparation Team, the existing undergraduate curriculum indicates:

(1) The subjects offered to the students in certain study programs are too many in compulsory as well as in elective groups.

(2) The subjects indicating University and Faculty have less competence.

(3) The specialization subjects in certain departments are shown in the high semester, some of the other study programs are given in the first year.

(4) The content of the subjects are too deep for undergraduate level especially for the elective subjects, some of them are too practical which are good for a diploma degree.

(5) The same subjects are offered by different study programs which are not efficient practically conducted by each department, such as, entrepreneurship, economics, management, communication, methods of scientific writing and presentation etc., since there is more competence department can serve those subjects.

(6) Overlapping among the subjects.

Based on the facts, it is very wise if the faculties think of better achievement, better academic atmosphere, and better quality of institution management in the future.

The descriptions above direct IPB to conduct some major and significant changes in order to improve its competitive standing against others and is positioned for a better future. However, as Kotter (1996) said, that in too many situations the improvements have been disappointing, with wasted resources and burnout, scared, or frustrated employees. Laske (1994) stated that change would happen in social system, which is strongly characterized by individual freedom, only when enough members of the system can agree on a guiding melody. In other words, IPB should manage the changes in the right steps, with reduce errors and by stepping in the right tracks.

Theoretical Background

This theoretical background will describe the reason why the changes are necessary from theoretical point of view. By selecting and reducing the number of the subjects, whilst the number of staff is stable, it will decrease the load of the lecturer in teaching activities. For example one lecturer who has been teaching five subjects in one semester

in a team teaching system can reduce the load to merely two full subjects full in one semester. It does not mean that the lecturer will not be employed, since the task of the lecturer is referred to **The Three Main Duties** of the university lecturer which consist of activities of teaching, research and community service. The lecturer will have more time for: (1) making the qualified research proposal, (2) improving the teaching and learning techniques, (3) supervising the student for final projects, thesis and dissertation more intensively, (4) doing the research and consultancy, (5) running the auxiliary enterprises. Having various activities inside or outside the university will assist the lecturer to improve the teaching capacity with more relevant contents. Regarding time management, the lecturer will have opportunity to do something that may affect the quality of human resources, quality of life and increasing welfare.

By integrating similar subjects, reengineering the content of the subjects and improving the teaching techniques, the graduates are expected to have the general competence and ready for facing the real world (job field). The graduates who have more competencies should be able to get the job immediately after graduation or after finishing their study, because they can compete with the other people in the same area. By reengineering the curriculum the student has a freedom of choice to select the specific competency; the opportunity to have the good reward should be higher. Selected specific competence has to be carefully designed.

According to Kotter (1996), there are usually some errors in changing the systems. However, there are some things that can assist the change i.e. by not allowing too much complacency and not neglecting to anchor changes firmly in corporate culture. In this case, the survey of satisfactions from the alumni sides and the users inside also from internal stakeholders like lecturers and technicians should be carried out in the right way to get the appropriate feedback. The mistakes of changing should not inevitable, and the key lies in understanding why the change is needed, in what kind of multistage process that can overcome the destructive inertia, and the last but not the least that how leadership required to drive the process in a healthy way more than good management. The methods of successful transformations are all based on one fundamental insight that is established in advance.

To increase the graduate's competencies, some of the study programs carried out the "studium generale" or special topics by inviting expertise from outside the university. According to Wessler (1999), introducing special topics into the normal academic curricula, such as communication, responsibility of handling conflicts, will not be enough to increase the competencies. There is a way for students to accept more easily the responsibility for their own learning by starting with strengthening interrelation of subject matter, with consistent activating methods, with new forms of examinations, give opportunity to the students for more practical works, and allowing the students to know what is going to be measured. Department-based system in curricula design is one of the solutions to be more independent in developing curriculum in departments. There are some principles, which are reflected in a department-based curriculum (Kelly, 1999), as follows:

(1) It acknowledges that a large measure of freedom for both lecturer and learner is a necessary condition for curricular provision, which is fully educational.

(2) It views the department as a human social institution which must be responsive to its own environment, consequently, must be permitted to develop in its own way to fit that environment.

(3) It regards it as vital to this development that the individual lecturer should accept a research and development role in respect of the curriculum, modifying, adapting and developing it to suit the needs of individual students and a particular environment.

The department or study program has to be able to define the competence, which consists of the personality competence, and the professional competence. A competency itself is defined as an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation. The simple words of competency are the specifications of knowledge and skill and the application of that knowledge and skill to the standards of performance required in the workplace. The meaning of underlying characteristics is that competency is a fairly deep and enduring part of a person's personality and can predict behavior in a wide variety of situations and job tasks. There are five types of competency characteristics, i.e. (1) motives, (2) traits, (3) self-concept, (4) knowledge, (5) skill. The development of five characteristics needs careful development especially in motives and traits as the core personality, which is difficult to develop. Therefore, the good curriculum should be established to develop and improve the student personality. Good curriculum will generate a good output at the end. Kelly (1999) stated that curriculum evaluation is clearly process by which we attempt to measure the value an effectiveness of any particular piece of educational activity, whether a national project or piece of work undertaken with our own students.

Objectives of the Project

The general objective is to establish an efficient system for undergraduate education implementation based on formulation of the minimum standard of academic competency of graduates.

The specific objectives are:

1. To implement the competence-based curriculum in each department to fit the needs and wants of the users or the job market and also the scientific vision.
2. To establish the department-based system to increase the efficiency of teaching and learning process and implementation undergraduate education program at Bogor Agricultural University.

Logical Project Framework and Methodology

Logical Framework

In establishing the competence-based curriculum, specifically through departmental–based curriculum, several activities will be conducted in each department and or at university level. The logical framework consists of: (1) evaluation of existing conditions of curriculum in each program study, (2) figuring out graduates profile in the future to meet scientific vision and job market satisfaction, (3) restructuring the curriculum and (4) socialization of the curriculum planning in each departmental level.
Accommodating Decree No 232/U/2000, the subjects offered should fulfill the development of student capacity, such as:

(1) Personality development which are the subjects for increasing capability to develop Indonesian human resources full of faithfulness to God Almighty, good personality, good self-esteem and have a good responsibility to the development of the nations.

(2) Knowledge and skills development that intended to provide the basic knowledge and skills in certain areas.

(3) Specialization in workplace, which provides the capability in certain area in order to be able to implement it in the workplace.

(4) Behavior and attitude development in workplace that is intended to build the good behavior to do certain specialized jobs.

(5) Living together, that is providing the ability to understand the rules and regulations in the community according to the area in the workplace.

This subjects grouping is basically facilitating the goals of learning stated by UNESCO (1999) recently, i.e.:

(1) Learning to know
(2) Learning to do
(3) Learning to be
(4) Learning to live together

Table 1. The group subjects offered in two curricula now and in the future

UNESCO-based goals	Content-based Curricula (Subject group)	Competence-based Curricula (Subject group)
Learning to know	Basic Specialization Subjects	Knowledge and skills development
Learning to do	Specialization Subjects	Specialization in workplace
Learning to be	General Subjects	Behavior and attitude development
Learning to live together	Specialization Subjects	Personality development subjects
		Living together subjects

The goals can be achieved by designing appropriate curricula through evaluating the content-based curricula, which is already in existence and analyzing the competence-based curricula that will be added to achieve better quality of graduates. Table 1 shows the group of subject given at present time and in the future.

The students are expected to have main competences and supporting competences and also other competences that support the main competences, if they want. To support the main competences, the students should be given the opportunity to choose the specific subjects as minor subjects either inside the department or outside department. These flexibilities should provide the added value in competitiveness of the job market. The most important things are the flexibility of major-minor subject selection should be given to each department to design. Department-based curricula should accommodate the opinion from internal stakeholder (scientific vision) and also the users (job market) and alumni themselves. The general design of department-based curricula can be seen in Table 2. To make it easy in thinking about the change, let us think about the load when content-based curricula alone were applied.

Table 2. Load of subjects improvement based on department curriculum design

	Content-based Curricula		Department-based Curricula		Curricula system
	credits	%	credits	%	
General Subjects	10	6	10	6	National & Institution
Basic Specialization Subjects	29	20	29	20	Basic Subjects for Agriculture Science
Specialization Subjects	20	14	46	34	Faculty Subjects
Specific Specialization	26	18	36-43	25-30	Department-Major
Other subjects which support main competences	60	41	15-22	10-15	Department-Minor

This Table above indicates that, in content-based curricula, the specialization which was conducted by department is high up to 59%, whilst the subjects indicated faculty character is only 14%, on the other hand the distinction of graduates is delivered based on faculty character. In department-based curricula which department plays an important role in education activities, the percentage of the subjects which indicate the specialization is reduced to maximum 45% and the subjects which indicate the faculty character become higher up to 34 %. By improving this curriculum, it is expected that the graduates will promote their general competences in a certain area and field of science.

The restructuring curriculum is merely not enough to achieve certain quality without improving a lot in teaching and learning techniques or methods. Participation based teaching method or advanced teaching methods should be introduced to the students

in particular ways. In this case, collaborative endeavor between students and teachers is necessary. Learners must be interested and actively involved in the process, the learning tasks must be related to real life work and experiences, and they also must know how they learn best and be able to articulate this to their lecturer. On the other hand, teachers must be experts in their subjects, they must have many strategies and techniques to transmit their knowledge and they must have an understanding of, and be open to the many differences in leaning styles that learners bring with them. Principally, the teaching method should encourage and reflect the active participation of the learners, as well as the teachers, in the teaching/learning process. Moreover, the delivery methods should be: (1) appropriate to the needs of the learners, (2) appropriate to the development and reinforcement of the competencies, (3) provide variety to cater for different leaning styles, (4) encourage participation, (5) motivate the learners and maximize learner activity, (6) review in different ways, (7) provide constructive feedback.

Project Activities

Several sets of activities are proposed to achieve the goals of the projects. The diagram below (Fig.1) shows that the gathering information of the needs of job market, scientific point of view, alumni satisfaction and existing students are resource for formulating the competencies of graduates. Restructuring, then become the most critical part in reengineering program for undergraduate course by considering lecturer loads, facilities availability, lecturer motives and conflict management. Step by step activities should be applied to manage the change. Finally socialization of the curriculum should be carried out to have a good feed back from the lecturer and the students themselves.

Detailed activities can be described as follow:

(1) Collecting data can be conducted by distributing the questionnaires to the external stakeholder (industries, local and central government, private companies, and consultant agencies etc.) and alumni. The questionnaires focus will be on gathering of information about competences and graduates profile. This activity should be done also to the existing students to assess the needs and wants to know, to be, to do and to live together in the future. These data will be processed to formulate the competencies and the profile of graduates.

(2) Determination of competencies by staff member is based on the vision of department with reference to the future science and technology development. The results can dictate and influence job market in the future. This activity will be held through workshop in each department and can also invite professor from different department to share input. On this session, evaluating existing curricula is very important by analyzing overlapping of the subjects, lecturer load, unbalance distribution of tasks and the future competencies related to the future science and technology development.

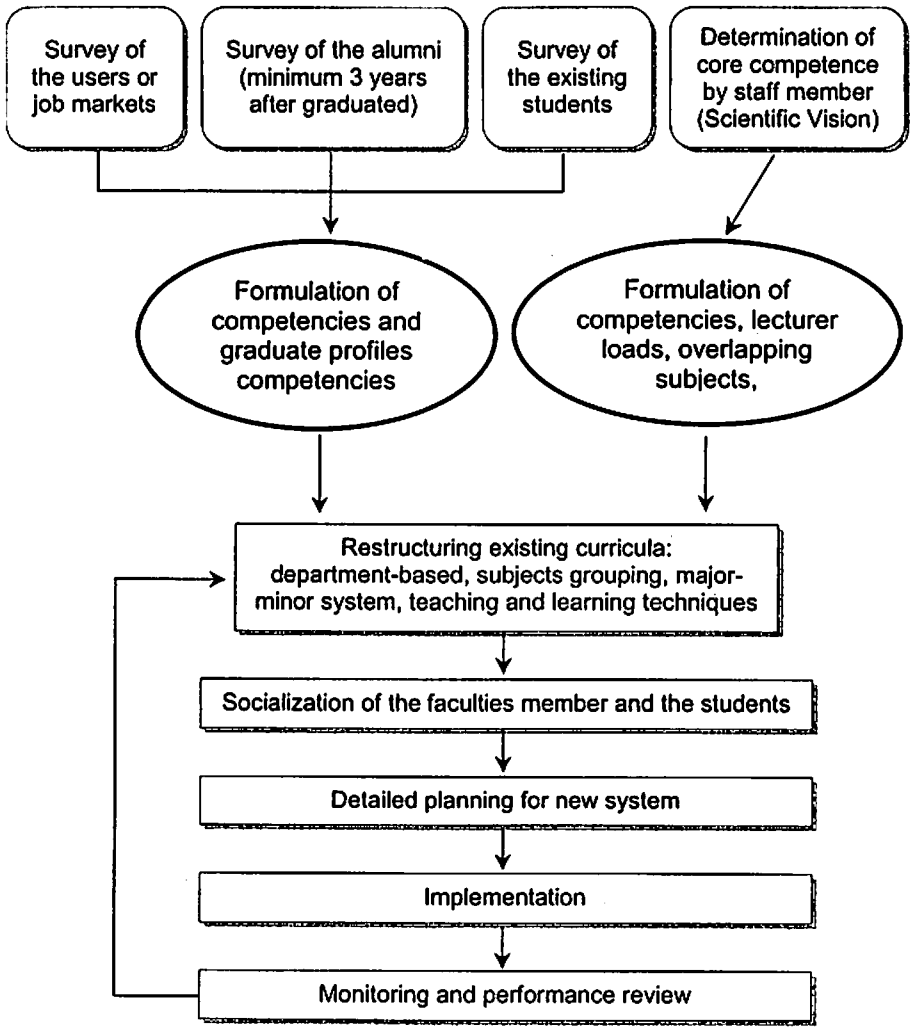

Figure 1. The diagram of logical framework

(3) Restructuring curricula at IPB (University) level is organized through workshops attended by (1) department representatives (e.g. head of department, education coordinator, head of study program), (2) faculty representatives (dean, vice dean for academic affairs, quality assurance team), (3) members of the institute of education assessment and development, (4) the rector and vice rector for academic affairs. 60 people will attend for a three days workshop. The topics of discussion will be about main competencies, supporting competencies, department-based curricula, major-minor subjects, teaching and leaning techniques review and introduction to participatory and advanced teaching and learning methods.

(4) Socialization is the most important part of management changing. This activity will be held by each of department to socialize concept of reengineering the curriculum with its advantages and challenging to the teaching staff and the students in separate time and place. From this occasion, it is expected that the opinion and ideas will come up with input for feedback and improvement.

(5) The pointed Taskforce in The Institute of Education Assessment and Development in IPB will make a detailed implementation planning.

(6) Monitoring in every semester by each department is necessary, and evaluation is reported once a year. The outcome from the curricula reengineering can be seen and reviewed after at least 4 years after the new curricula have been implemented.

(7) The follow up of the review results should be discussed to improve the quality of graduates.

Performance Indicators

The performance of this project can be reviewed by measuring some indicators concerning reengineering of curricula, expected output, outcome, and impact. The diagram of performance indicators can be seen in Table 3.

Table 3. The diagram of performance indicators of the projects

Process	1. The questionnaire % of returned 2. The completeness of written survey document 3. The number of staff attending and participating in a Workshop 4. The task force responsible for organizing the meeting. 5. On time monitoring and review
Output	1. The number of department survey results 2. The number of department have written main and supporting competencies document 3. The written workshop report 4. The written document of implementation plan 5. The report of monitoring and review activities
Outcome	1. The waiting time for the first job 2. The number of unemployed graduate 3. The first salary level 4. The position for the first job 5. The productivity of the lecturer 6. The efficiency of education management
Impact	1. Better satisfaction of the stakeholder 2. Better life quality for lecturer 3. Well-managed university in terms of fund, facility and human resources.

Time Schedule

This project will be conducted in one year (12 months), starting September 2003. The detailed agenda shows in Table 4.

Table 4. The time schedule of the project implementation for the first year

No	Activities	Month											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Project Preparation												
2	Questionnaire Design												
3	Survey												
4	Meeting of Scientific Vision												
5	Data Processing												
6	Workshop												
7	Report Writing												
8	Socialization												
9	Implementation Planning												

Project implementation will apply for 4 years (it means one student batch for undergraduate program), and monitoring will be conducted in every semester.

Budget Proposal

The budget will be provided by IPB especially for workshop and for team task force expenses (for meeting and consumable expenses). Each faculty will contribute funds for conducting the survey and data processing, whilst the meeting expenses for competences formulation will be cover by each department.

Acknowledgment

I would like to express my grateful thank to Dr. Matthias Wessler for being patience in discussing and setting up the project proposal. Also my deep appreciation is conveyed to the facilitators, Prof. Michael Fremerey, and Dr. Sia Amini, who have enlightened me in university management courses. I will not forget my colleague's contributions (Dr. Adil Basuki Ahza, Lien Herlina, MSc) at IPB for sending me the data for this proposal. Last but not least, my special thank is delivered to Edrrinee, my best friend, for sharing ideas and giving me an input.

References

Anonymous, (1997): *Pedoman Program Sarjana IPB.* IPB Press. Bogor

Kelly, V.A. (1999): *The Curriculum: Theory and Practice.* Paul Chapman Publisher. Ltd. London.

Kogan, M., Bauer, M., Bleiklie, I., Herkel, M. , (2000): *Transforming Higher Education: A Comparative Study.* Jessica Kingsley Publisher. London.

Kotter, J.P. (1996): *Leading Change.* Harvard Business School Press, Boston.

Laske, S. (1994): *A Quality Songline.* Innsbruck.

Sudirman Y., (2002): *Kurikulum Berbasis Departemen dalam Sistem Major-Minor.* Makalah Lokakarya Pendidikan Berbasis Kompetensi. IPB. Bogor.

Wessler, M., (1999): *Beyond Input: Changing Patterns in University Teaching and Learning.* In: Towards a shared Vision for Higher Education Cross Cultural Insight & Projects. Vol2, p. 89-96.

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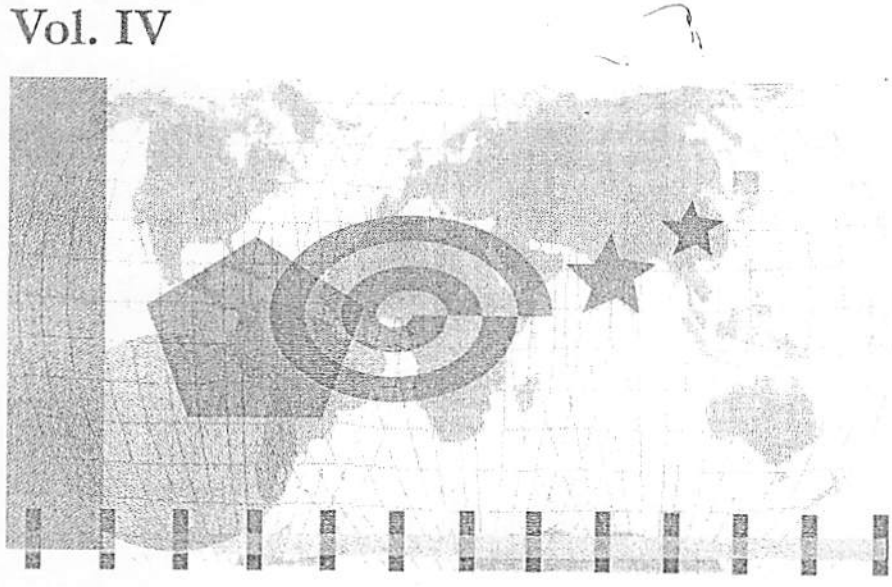

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Foreword

With this reader, we submit the fourth volume of relevant project-papers, written by participants of the University Staff Development Programme Witzenhausen (UNISTAFF), 2001 - 2004. The three previous volumes, published in 1997, 1999 and 2002 contain projects elaborated by UNISTAFF-participants in the years 1994-1996, 1997-1998 and 1999-2000 respectively. The basic objective of this series of readers is to support the emerging transformation of universities into institutions, which are responsive to the growing demands for change in the fields of organisation, curricula and teaching, and research management.

Many people have contributed in one way or the other to this book. First of all our thanks go to the authors of the various articles, who impart their highly relevant experiences and visions to a wider public. It was not possible to include all project papers since some of them had a distinct domain-specific focus. We did not try to polish the English language of the papers, but maintained the individual peculiarities of every author's text. Further more, we would like to thank International Further Education and Development (InWEnt) for its significant financial support, without which the Institute for Socio-cultural Studies (ISOS) would not have been able to publish this volume. Not least, we would like to acknowledge our debts to Susanne Bierwirth who provided invaluable support to the outlay of the manuscript and to Anthony Alcock for his proof reading.

We hope that this volume will meet with the same favourable response as the previous ones and thus helps to further contribute to the development of a climate of change in our universities.

Siawuch Amini
Michael Fremerey
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Witzenhausen, July 2005

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