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Networked shaping in the development and use of a further education system for vocational educators – a perspective also in Indonesia?

An interview on a proposal for an Indonesian development project

Introduction

Indonesia, like many other countries, faces major economic and other social challenges, which also lead to new demands in vocational education and training. German vocational education and training is often cited as a model when it comes to successfully mastering these tasks. Friedhelm Eicker, Professor and Senior expert in the Senior Advisory Board of the University of Siegen/Technical Vocational Didactics, has supported German and international development projects for the modernisation of vocational education and training over many years (see: eicker-bbw.de). In December 2017 he was invited by the Vocational School Tunas Harapan in Pati, Java in Indonesia to further educate the teachers. In 2018, at the request of the Indonesian Embassy in Berlin, he drew up a proposal for a long-term project on the establishment and use of a training system for vocational educators. The following interview explains the proposal (1).

Interview

1   What motivated vocational trainers in Indonesia/Java/Pati to ask you as German expert for help in the further development of vocational education and training of teachers?

In concrete terms, only my Indonesian partners can answer this question. But I am confident to say that in Indonesia, as in almost all countries, economic, cultural, social and other challenges require a rethink of the traditional vocational training system and thus of vocational teaching and learning as well as the education and training of vocational educators. In many places, the German vocational training system, which I also represent, is regarded as a role model, especially with regard to how it has been updated in recent years: The modernised German Dual system, the curricula related to learning fields, competence-oriented teaching and learning and the education and training of vocational educators based on these appear to be desirable. Accordingly, there is currently a demand for German vocational educators. In my view, the problems associated with modernised vocational education and training as well as with the initial and further vocational training of vocational educators must not be overlooked.

In many development projects - including international ones - attempts are being made to recognise and overcome the continuing inadequacies. Initial successes are attracting attention. They have also raised expectations in Pati/Java/Indonesia, especially with regard to the training of vocational educators.

2 Have you identified a fundamental problem which, in Indonesia or other countries, affects the further development of vocational education and the training of teachers?

A basic insight was confirmed: In Indonesia, too, adaptation-oriented vocational training traditions are deeply rooted in the thinking and actions of vocational trainers, in the design of vocational training systems and in the training and further education of vocational educators. Often this "only" requires that vocational educators and learners adapt to "external", supposed, progress. It is hardly recognised that it is beneficial for modern companies, vocational schools/colleges and other vocational training institutions and overall social development if teachers and trainees can exploit their full potential. This requires a shaping oriented approach that leads to independent, active vocational educators who help to develop all aspects of vocational training institutions. However, vocational educators must see themselves challenged to discuss and justify their guiding idea for vocational education and training in the context of possible operational and social developments. They must then be able to identify and solve their development tasks (meta, meso, micro-tasks). They may, for example, be involved in setting up the vocational training system, designing training courses or providing their own vocational education and further vocational training. Development projects should therefore begin with a well-founded understanding of the paradigm to be followed. In my opinion, the networked shaping should be identified.

3 So for you in Indonesia too, networked shaping is the key to advanced vocational education and the further training of vocational educators!?

Networking is - apart from considering alternatives - the most important (inherent) shaping characteristic in elaborated work processes as well as teaching and learning processes based on them. In vocational education, networking allows the shaping potential of vocational educators and vocational learners to be fully exploited. This is intended to enable them to work "in a common course" from different learning locations.

In Indonesia, the work orientation and thus the (networked) labour of the workers and teachers/learners hardly sufficiently correspond. If teaching and learning in companies and schools is organised in parallel via curricula and training regulations instead of interlinking them, teaching and learning or education and further training remains more or less distant from the work process. As in Pati, for example: Teaching and learning should be career-oriented, for example for students who become experts in light vehicle engineering or industrial automation. Teachers, however, usually teach individual, less vocational subjects -

such as chemistry, physics, mathematics and English - which are hardly associated with the trainees' working environment.

With the help of networked shaping, a path can be taken in which separated teaching and learning or education and further training can be overcome, also in Indonesia. In this way, education and further training can actually be geared towards the requirements on teachers and learners. The vocational learners have to refer to their work processes in the companies. And the teachers have to refer to their operational work processes in their teaching. Teachers must above all focus on the (future) work of the learners. Respective cultural and other circumstances must be taken into account. It should not be attempted to simply transfer the German Dual System. If proven paths are to be transferred to Indonesia as well, the foundations of the paradigm on which the Dual System in Germany is based must also be reflected. Existing problems must not be ignored either. This means that there will also be a debate in Indonesia about the key that I have recommended and justified, namely networked shaping (2).

4 How can the indicated barriers or impairments in vocational education and further training of vocational educators in Indonesia (or in other countries) be overcome or dismantled?

I am not a prophet when I say that solutions here cannot be achieved with crash courses. This requires time and long-term special training for vocational educators. This also requires continuous further training for vocational educators who are already working in vocational schools/colleges, universities, ministries, in companies and in other places. If the vocational educators themselves have the necessary competence to arrange learning situations, they can ultimately also accompany their learners in acquiring the desired (networked) shaping competence (3).

I encourage project-oriented education and further training. Further training should require the vocational educators to be trained to acquire (networked) shaping competence by identifying and solving real-life work/process oriented tasks. It is encouraging that such advanced training projects have already been successfully implemented and are in demand. The "Train-the-Trainer System ("TtT-System")" - explained below - is a special example. It was jointly designed by vocational educators in South Africa, Mozambique and Ethiopia with the help of German experts and implemented and used in initial steps.

5 What is the proposed project-oriented education and further training and what is their particular value?

Vocational training or vocational learning projects are to be understood as processes of knowledge and change. Real and relevant work, teaching and/or learning tasks are the focus and must be solved. As realities, the tasks are always complex – in operational, social and other circumstances. They can neither be located and solved solely in the individual sciences

(social sciences, psychology, etc.), nor in the specialist sciences (e.g. electrical engineering, chemistry, mathematics, etc.). It should be noted that elaborate task solutions can almost always be achieved in several - alternative - ways, whose respective advantages and disadvantages must be explored and taken into account. Elaborate solutions also aim to challenge and promote the entire competence potential available (of all participants).

6 Ultimately, of course, every development project in Indonesian vocational education and training must lead to improved learning. What are the intended appropriation processes?

In my experience, acquisition of networked shaping competence can be expected when oriented towards the following model.
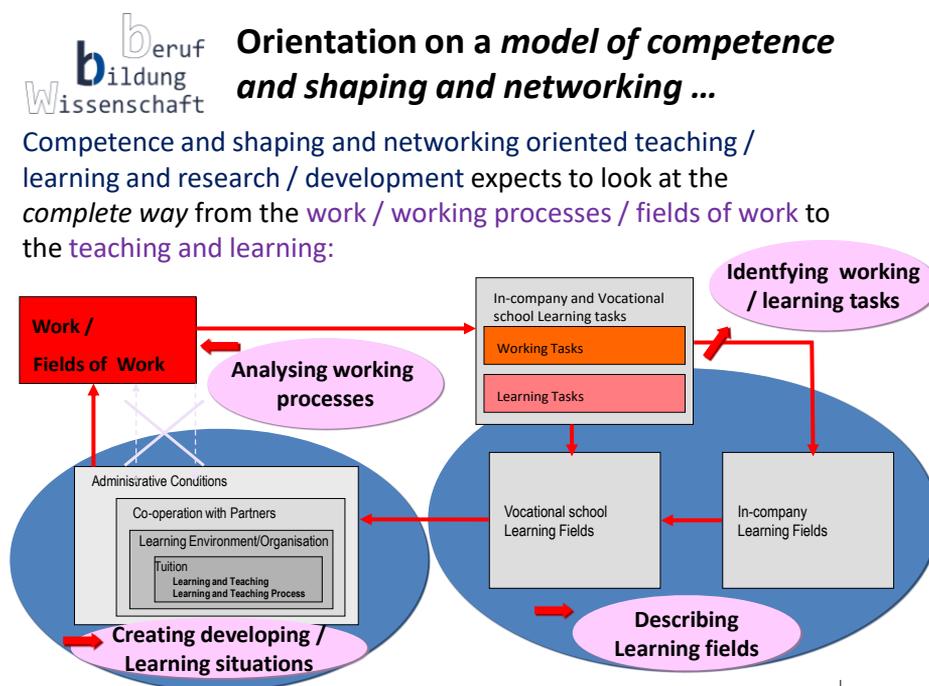

Figure 1:   Model of competence, shaping and networking
(Own representation)

The starting point for all planning must be the analysis of the work or work processes or fields of work in which the learners are active or (later) wish to become active. Vocational educators to be trained have to analyse their teaching. Ultimately, the aim is for the trainees to learn how to shape their work by means of the expected appropriation processes. Of course, no in-depth scientific analyses can be expected; but the trainees can participate in finding out the central work tasks in this way. (University) Professional scientists must support this. The analysed work tasks are to be transferred into learning tasks with a view to the planned learning processes. By solving the learning tasks, the trainees should then acquire the desired (networked) shaping competence. Suitable learning situations are arranged so that this can

succeed (4). The learners must solve the learning tasks "theoretically" and "practically". For vocational educators as trainees, as learners, this may mean, for example, to plan, implement and evaluate a learning project (5). Vocational/collegiate students, for example in the field of electrical engineering, could be commissioned to install an alarm system in their home. They process this order from the preparation of the offer to the completion and acceptance of the installation. This means that they inform themselves about the order, independently implement their own planning and check the result with the client. In addition, they reflect on their own shaping process. Many learning tasks and possible solutions are conceivable. In any case, it is important that the learners become independent, active and, as far as possible, self-decisive and that they actually solve the identified tasks.

It is necessary for the teachers to especially plan learning projects by arranging the learning situations, which focus on the acquisition of networked shaping competence (6). The available learning environments (school/college organisations and equipment) must be taken into consideration and, if necessary, further developed. The intended networking with regional or supra-regional companies must also be taken into account and possibly (further) encouraged. The guidelines for teaching and learning (curricula, etc.) should also be reflected upon and improvements should be stimulated and implemented as far as possible with a view to networked teaching and learning (7).

7   In the development project *Networked shaping in the creation and use of the further education "TtT-System"* you see an Indonesian perspective. What essentially distinguishes it?

Indonesian vocational educators are given the opportunity to devote themselves "theoretically" and "practically" and with the necessary long-term orientation to their vocational education and in particular to their further training. In doing so, they can acquire (networked) shaping competence together and with the support of proven experts. They can do this by establishing and using their own further education system, following the example of the proven "TtT-System" explained below. This leads to an actual improvement - to the benefit of the Indonesian vocational educators and regions involved in the project. It is possible that the desired Indonesian training network ("TtT-System") can - later - be linked with other international networks. Then common, overarching tasks could be identified and solved. This would achieve a more far-reaching international design and use of the shaping-oriented training network for vocational educators (in Sub-Saharan Africa), which has already been set up and used in initial steps.

8   The far-reaching expectations of the Indonesian training network with the "TtT- System" should be reflected in the project design. How can the development processes and project management take place?

It is advisable to make use of previous experiences, such as those gained in the Chinese LFC project (8). There, teachers in five different vocational colleges (9) should acquire a

(networked) shaping competence. They should create the school conditions for (networked) shaping-oriented teaching and learning. In addition, the teachers should "practically" check the relevance of the conditions or of teaching and learning.

Figure 2: Development steps in the LFC project
(Modified according to own LFC project documents)

Figure 2 shows: this task was solved in ten steps within three years. There was a cross-college workshop (I to X) with German input, followed by a college-specific workshop with practical implementations (I+ to X+). The entire project was led and managed by a steering group (the German project leader together with the Chinese coordinator). The coordinator also took over important translation tasks. In particular, the steering group prepared workshops I to X, which were attended by two representatives of the college groups (the college group leaders and their representatives). The steering group and the college group leaders formed a core group consisting of 12 people. In each workshop, the steering group of the core group first reported on the progress of the project. The plan for the upcoming workshop was presented, discussed and agreed upon. Input (lectures, etc.) was given by German and Chinese experts. This input was discussed as well. Subsequently, exemplary "practical realisations" were carried out, documented and evaluated. Finally, the further course of the project (overall and especially in the next workshop) was discussed and appointments were made.

The college-specific workshops (I+ to X+) took place after each cross-college workshop. The respective college group leader transferred the acquired competence to the college group: The overall status of the project was reported and the intended plan for the current workshop was presented, explained, discussed and agreed upon. As far as possible, the input received was

described and discussed. Subsequently, college-related "practical implementations" were carried out, documented and evaluated. Lastly, proposals for the further course of the project as a whole and in the workshops were developed, discussed and agreed upon. The college-specific workshops were accompanied by the Chinese coordinator and where possible also by the project manager. The steering group was responsible for the evaluation of the project. After analyses of the work/work processes/fields of work of the teachers and also of the learners, central topics in networked, shaping competence-oriented teaching and learning could be addressed one by one in the workshops or with the inputs (10).

Even though it must be critically stated that not all topics were addressed in the expected depth due to time constraints, the teachers were able to acquire shaping competence. Not only the participants in the core group, but also, with some limitations, many other teachers in the college groups. Accordingly, the LFC project has had a relatively widespread and sustainable impact. The expected "products" were created by the teachers and are still used today. Instead of learning goal-oriented curricula (à la Bloom (11)), learning field-oriented curricula were developed, the colleges were redesigned (experimental rooms instead of classrooms similar to waiting rooms, learning project groups instead of classes, etc.) and much more. It is emphasised that the teachers planned, implemented and evaluated numerous shaping competence-oriented learning projects. The developed "products" were partly published or are available.

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First possible „products" (interim results)
• Numerous PowerPoint presentations about the German input
• Chinese edited DVDs about the inout
• Chinese text books about single project topics
• Some German essays about fundamental topics
• DVDs about the changes at the universities
• First extensive written reports about the teaching projects
• DVDs about the tests in the universities
•-Summarising Chinese presentations about interim results of the project

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LFC-Beijing / China + Germany

Shaping competence-oriented learning projects in learning fields

➢ **„Spot-welding on automobile wall" - a learning field oriented learning project**
» Electrotechnical and Technology College Beijing
➢ **„Student Information Management System" -a learning field and competence-oriented learning project**
» Beijing Information Technology College
➢ **„Accounting Informationization" - a learning field and competence-oriented learning project**
» Beijing College of Finance and Commerce
➢ **„Sales of Goods" - a learning field and competence-oriented learning project**
» Beijing Vocational College of Labor and Social Security
➢ **„Christmas Banquet design" - a learning field and competence-oriented learning project**
» Beijing Business School
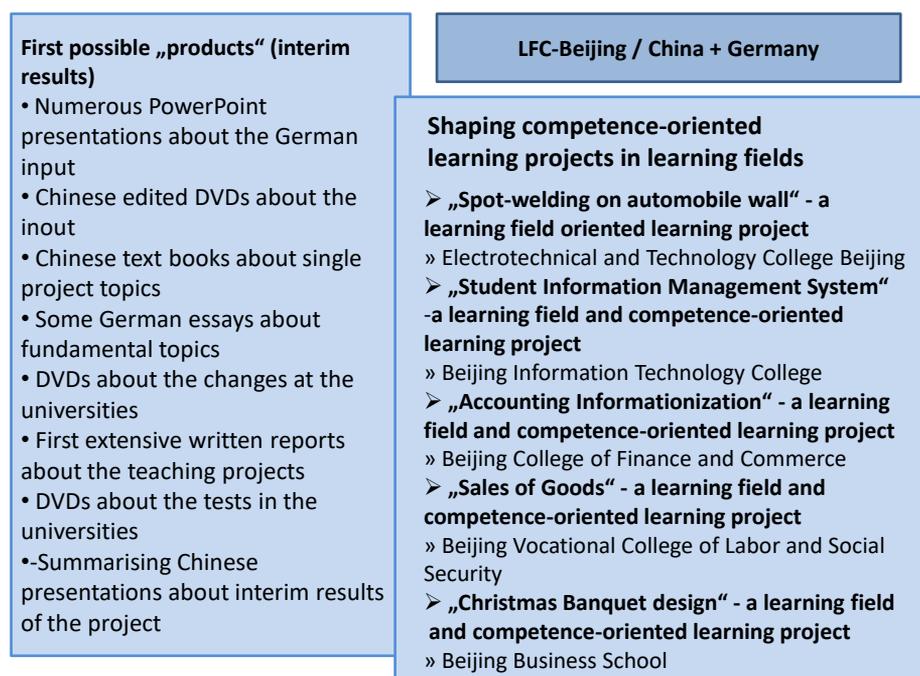
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Figure 3: Products and projects in the LFC-project
(Modified according to own LFC project documents)

However, the LFC project has not yet aimed at a shaping-oriented and networked further education network or system that can be used across projects and colleges and over the long term.

9 You have explained that in Sub-Saharan Africa there is a role model for the development of networked shaping competence together with the establishment and operation of a further training network or system. What essentially distinguishes this model and what can be taken up in Indonesia?

The VET-Net project has shown that even vocational educators with initially low competence can acquire the shaping competence in order to successfully set up a further education system (12). Teachers from universities in Mozambique, Ethiopia and South Africa, together with vocational educators, especially from vocational schools/colleges and from some companies, have initiated a process of developing networked shaping competence. This was done with the support of universities in Rostock and Siegen. In this context, the so-called "Train-the-Trainer System ("TtT-System")" was developed and used.
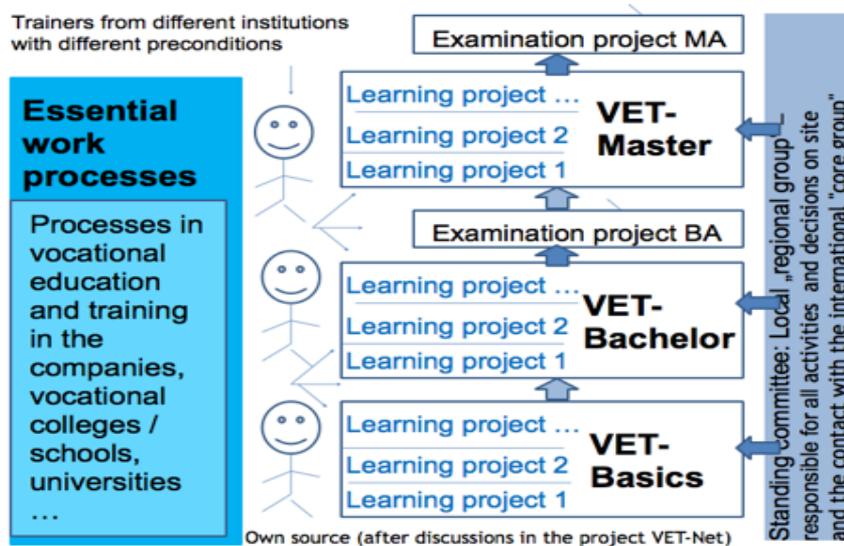

Figure 4:   Sketch of the "TtT-System"
             (Eicker, Fiedler, Haseloff 2017, 227) (13)

This "TtT-System" is highly flexible. It focuses on the special training opportunities in the participating regions in the African countries. In Mozambique, Ethiopia and South Africa, vocational educators with very different skills teach at very different levels. Many of them

state that they want to undertake efficient training and, if possible, progress to the PhD level. For most of them, this is only possible on a part-time basis and within certain time frames.

All in all, the "TtT-System" clearly had to comply with the official requirements in the African countries. However, the vocational educators involved in the VET-Net project also tried to respond to the requirements and possibilities of vocational educators. Learning projects on three levels are planned: Basic level for those with very low pedagogical and technical competence as well as Bachelor and Master level for those with corresponding advanced competences. The targeted PhD level can initially be neglected, as this is hardly realistic. Within the levels, learning projects build on one another. This means that the competence to be expected in Learning Project I is a prerequisite for Learning Project II. The Bachelor and Master learning projects are concluded with examination projects. If the trainees have the required entry level, they can flexibly select the learning projects. They do not have to work through everything "in a row".

All learning projects focus on the specific work experience of the trainees (e.g. teachers in the vocational schools/colleges). With the help of the trainers, the respective trainees have to identify a work task, i.e. a transferred teaching or learning task, which is very important in their school, university, company or other teaching practice. This is to be discussed in the learning project. The task must be relevant for all project participants. It does not yet have to be able to be solved completely independently, but it does have to be within the range of the next development possibilities of the trainees. The named and justified assignment is then the learning task in the learning project. It should be solved "theoretically and practically". Learning and teaching should take place at the locations that offer the best learning opportunities (university, vocational school/college, company or elsewhere). In this way, the trainees acquire the extended competence they are looking for.

The "TtT-System" or the learning processes are managed on site by steering committees. The steering committee is responsible for management, documentation and evaluation on site. Representatives of various steering committees should work together in an international core group with international vocational educators appointed on a long-term basis. This will ensure that the "TtT-System" meets supra-regional/international standards.

10 What are the consequences for the Indonesian development project in which the Chinese and Sub-Saharan experiences are used? How can the establishment and operation of a further education network be pursued, in which vocational educators acquire shaping competence together with the development of a further education system?

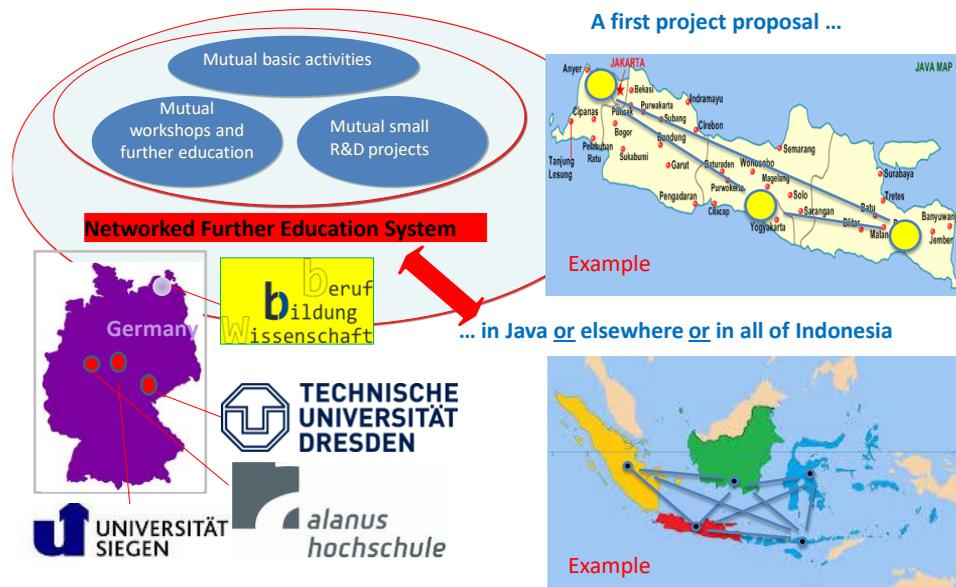The Indonesian development project can be transferred - as can be seen as an example in Figure 5.

Figure 5: A perspective in further education and training for VET educators in Indonesia (Modified according to own VET-Net project documents (14))

As in China and Sub-Saharan Africa, joint basic activities, workshops and further training as well as small research and development projects are to be expected. They will be designed jointly with the German universities involved in the project. The outlined step-by-step sequence of supra-regional workshops with preparations, inputs (lectures) and practical exercises as well as subsequent workshops at vocational school, college, university or company level presents itself. Various German institutions can be considered as partners. In Indonesia it should first be decided to what extent or in which region the project is reasonable. Centrally located vocational training institutions (possibly also universities or companies) that cooperate with other vocational training institutions in their respective environment should be identified.

The project, the possible procedure and the potential management can be seen in the sketch shown in Figure 6.
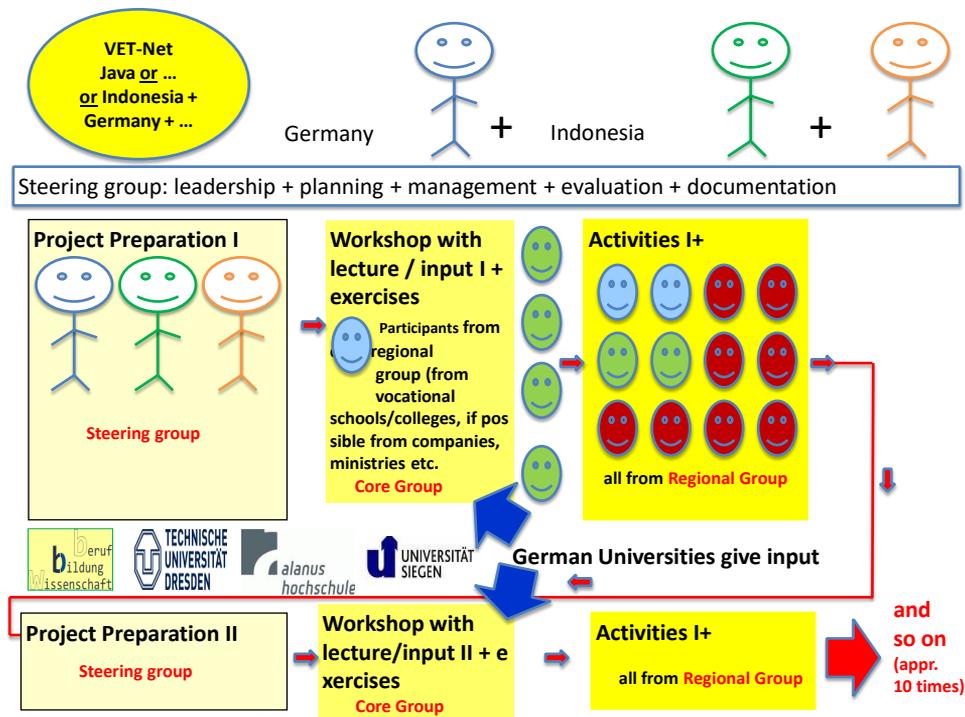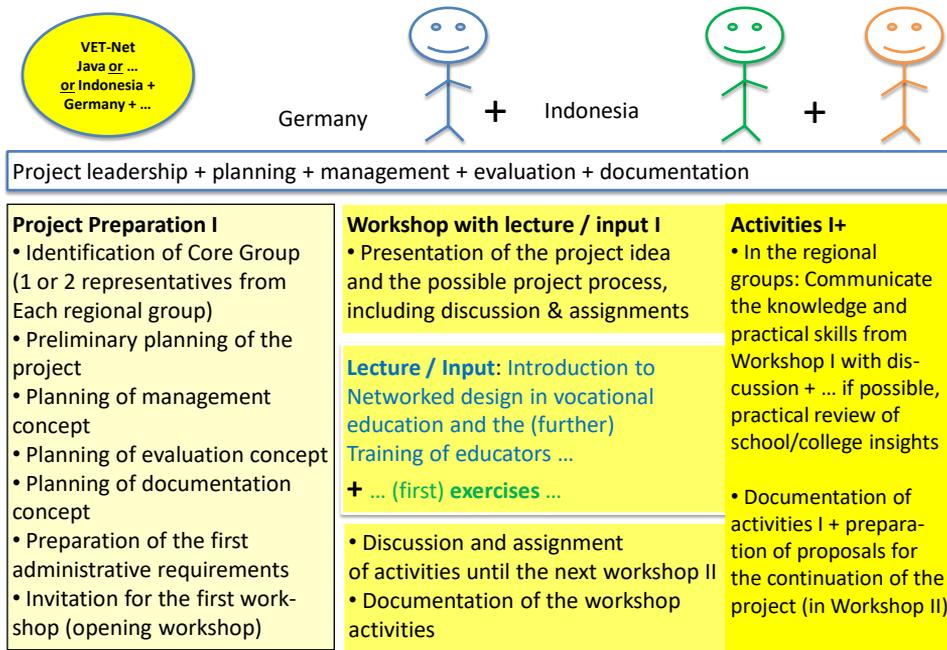
Figure 6:   Possible project management structure
             (Own representation)

A steering group with an Indonesian and (German) partner project manager and an Indonesian project coordinator, who can also take on translation tasks, is to be filled. Central vocational training institutions (possibly also universities or companies) participating in the project must also be identified. These should cooperate with other vocational training institutions in their respective environment. Regional groups are formed at the central vocational training institutions with as many teachers as possible in all vocational schools/colleges, universities, companies and other vocational training institutions involved in the project and, if applicable, ministries as well.

Representatives from the regional groups are to be recruited to work in the core group (one leader with one representative, respectively). Of course, the steering group, the core group and the regional groups must be fit for work - in other words, they must receive further training (15).

How the development step leading to the project can be concretely designed can be seen, as an example, from the sketch in Figure 7.

Example for step I: Preparation I + Workshop with Lecture/Input I + Activities I+

Figure 7:   The first step in the project
            (Own representation)

11 What is the final/summary message that can motivate Indonesian decision-makers to implement the project?

Networked shaping for developing and using a further education system for vocational educators can also offer good prospects for Indonesia.

The proposed project offers the opportunity to rethink and modernise the traditional Indonesian vocational training system and thus the vocational teaching and learning as well as the further training of vocational educators. Internationally experienced vocational trainers (from Germany and elsewhere) can contribute important experience from successful development projects. Thereby, it is not the aim to simply copy the German system of vocational education and the further training of vocational educators. It should be asked to what extent the (modernised) German Dual System, the curricula related to learning fields, competence-oriented teaching and learning, etc. and the further training of vocational educators in Indonesia based on these are reasonable. It is not enough for German vocational trainers in Indonesia to explain their vision of vocational education and training (and then leave the Indonesian vocational trainers alone). The Indonesian vocational educators must be put in a position to develop their own (networked) shaping competence for the further development of vocational education and training and the (initial and) further training of the Indonesian vocational educators independently, actively and self-determinedly. Under these conditions, a meaningful Indonesian further education system for and by Indonesian vocational educators can be established and used with German/international support. Internationally integrated and geared towards international activities, the further education

system will also comply with international standards and enable teaching and learning at the current international state of knowledge.

Endnotes

1) The interview was conducted by Gesine Haseloff, research associate at the University of Siegen/Technical Vocational Didactics (haseloff.tvd@uni-siegen.de). Friedhelm Eicker has been involved in the training of Indonesian professional educators since 2017, among others on behalf of the German Senior Expert Service (SES).

2) Eicker, F. (2009): Vernetztes Gestalten - eine Perspektive in der kompetenzbezogenen Berufsbildung,. In: Eicker, F. (ed.), Innovation durch universitäre berufliche Bildung - Zum Gestaltungs- und kompetenzorientierte Lehren in der Gebäudeautomation, Bremen, 114-134.

3) Eicker, F. (2009): Mitgestaltungs- und kompetenzbezogenes Lehren und Lernen, in: Eicker, F. (ed.), op. cit., 213-232.

4) This corresponds to the model of the holistic teaching / learning activity (informing - planning - deciding - executing - controlling - evaluating) required in Germany.

5) Yi, Y. & Xie, L. (2008): (Mit-) Gestaltung und kompetenzorientierte universitäre berufliche Bildung - Planung einer Unterrichtseinheit zur Gebäudeautomation, in: University of Rostock / PHF / IASP / Technische Bildung (Ed.) (2008). TECHNICAL EDUCATION FOR A CO-SHAPING WORKING IN BUILDING AUTOMATION, Results of the Project "Innovation by Universitary Vocational Training - Curriculum Development for Competence Promotion in Building Automation - *uni-komnet*", Teaching Projects, VOL. II, Putbus, 414-425.

6) Meyer, R. & Richter, C. (2004): Lernsituationen gestalten – Berufsfeld Elektrotechnik, Troisdorf, 31-36.

7) Eicker, F. (2009), op. cit.

8) LFC: The Learning Field-Curriculum – A Method of Teaching Design, 2008-2011.

9) Participating in Beijing: Electrotechnical and Technology College, Information Technology College, College of Finance and Commerce, Vocational College of Labor and Social Security, Business School.

10) Central topics included learning fields/learning tasks/transfer of working tasks into learning tasks/competence and action or shaping oriented learning/networked teaching and learning/shaping oriented learning models/shaping oriented learning arrangements/planning of shaping oriented learning projects/evaluation of networked, shaping oriented teaching and learning.

11) Krathwohl, D. R. (1974): Taxonomy of Educational Objectives: The Classification of Educational Goals – Benjamin Samuel Bloom, University of Michegan.

12) Haseloff, G. (2017), op. cit., in particular part IV, chapter 11.

13) Eicker, F., Fiedler, K.-A., Haseloff, G. (2017), *Networked shaping* – a perspective for international vocational education and further education of vocational educators. In: Kaiser, F. & Krugmann (Eds.), S.: Social Dimension and Participation in Vocational Education and Training. Proceedings of the 2nd conference „Crossing Boundaries in VET", University of Rostock 2017, 223-231.

14) Maps of Indonesia and Germany from google.maps.

15) An attempt should be made to apply for project funding, e.g. from the Senior Expert Service (SES), German Academic Exchange Service (DAAD). I see travel and accommodation expenses as the main costs. All other - relatively low - costs should be possible to be covered by the budgets of the vocational training institutions involved in the project.