Evaluation of Entrepreneurship Education at Universities

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Abstract: In order to raise the potential of founders among students and to support academically educated start-up entrepreneurs, in the last years there was a strong focus on implementing entrepreneurship education (EE) on university level. Due to high expenses for these awareness campaigns and support measures proofs of the effectiveness and efficiency of these programs are rapidly gaining importance. The boom in EE and the increasing criticism of missing data about the impact of these measures are the starting points of this paper. Results of a research of EE evaluation studies at university level and evaluation concepts are discussed and form the basis for proposals for designing evaluation studies.

Keywords: Evaluation, Evaluation concepts, Entrepreneurship Education, University, Impact of Entrepreneurship Education

1 Entrepreneurship Education Boom and Evaluation Deficit

Increasing the number of start ups and business successions and improving the support for young entrepreneurs is internationally of high importance for the economy and the labour market (European Commission 2004a,b, Schauer et al. 2005). Numerous studies show a strong correlation between entrepreneurial competence, especially implicit entrepreneurial knowledge (Staudt et al. 1997) and the success of start ups (Garavan & O’Cinneide 1994, van der Sluis et al. 2004). Massive public investments led to an expansion of the support infrastructure and to a growth on the supply side of training, coaching, information and financing for nascent entrepreneurs and start ups. Entrepreneurship Education (EE) is a growth
Innovative and growth oriented start ups are particularly expected from university graduates. Therefore, EE was also widely intensified at universities. Surveys show a strong increase in entrepreneurship chairs in the USA as well as in the European Union (Twaalfhoven 2001). Due to the high expenses for awareness campaigns and support programmes for nascent founders and successors among students and post-graduates, proofs of the effectiveness and efficiency of these measures are rapidly gaining importance (Hills & Morris 1998, Braun & Diensberg 2003). One example for that is the criticism concerning the impact of business plan competitions in terms of resulting start ups. Sternberg & Klose (2001) also point out that a large proportion of participants in subsidized EE programmes would have founded an enterprise anyway. Last but not least crowding-out effects have to be taken into account. The boom in EE and the increasing criticism of missing data about the impact of these measures are the starting points of this paper. It deals with the question how a practice-oriented model of evaluation including the impact level can be developed and established.

2 How Widespread is Evaluation of Entrepreneurship Education?

Very different definitions for evaluation can be found in the literature. Evaluation serves to trigger programme innovation, to control and optimize programmes, to forecast outcomes, to support strategic decision-making on policy level and on programme level (Neuberger 1991). Wottawa & Thierau (1990) point out that evaluation is targeted and purpose oriented. It serves as support for planning and decision-making by assessing several alternative actions. Evaluation of training and consulting was dealt with in numerous publications (Kirkpatrick 1967, Warr et al. 1971, Stiefel 1974, Easterby-Smith 1986, von Landsberg & Weiss 1990). EE evaluation concepts were developed by Hills & Morris (1998), Henry et al. (2003) & Fayolle (2004a). Despite this vast amount of literature, studies still show a widespread deficit in evaluation practice (Kailer 2001).

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1 It has to be noted that there exists no clear definition of EE. EE programmes focus on the main areas of (non-) degree courses and teaching, research and practical applications (Hisrich 1992). Stampfl and Hytti (2002, p. 129) highlight the following functions: "Learn to understand entrepreneurship, learn to become entrepreneurial, learn to become an entrepreneur".
3 Evaluation of Entrepreneurship Education Programmes at University Level

In 2005 the author conducted an exploratory internet research in 18 countries concerning evaluation studies of university entrepreneurship programmes. As university courses usually include an obligatory evaluation, mainly written or oral exams and assessment of the lecturers by anonymous questionnaires, the analysis focused on impact indicators in evaluation studies.  

3.1 Overview of the Results

The study revealed a broad spectrum of EE programmes organized by universities and further training. Although the course descriptions found in the internet were detailed, hardly any information could be found which would allow to draw conclusions on the efficiency and effectiveness of the programmes. As far as evaluation studies are available, they are mostly at the monitoring level. This is similar to the findings of Storey (2000), Braun & Diensberg (2003) & Hytti & Kuoposjaervi (2004). Ex-post evaluation designs clearly dominate. In most cases the studies are limited to a questionnaire sent out to students, graduates or alumni of colleges or universities or to graduates of a certain programme. Questionnaires usually concentrate on their attitude towards entrepreneurship as well as their entrepreneurial potential, perceived hindrances and graduate’s foundation rates. Since these surveys usually cover several subsequent study years, the development in the student’s attitude towards entrepreneurship during their studies as well as the development of start ups of former participants are analysed. Evaluation designs with pre- and post-test(s) are rarely carried out. In most cases merely one instrument is used (typically a questionnaire sent via snail mail. The evaluation studies rarely concentrate on the programme impact. On the output level in most cases the foundation rate of (former) participants and the jobs created through these start ups are analysed. Distortions caused by crowding out effects or windfall gains for participants are hardly taken into consideration. Only in studies with a long observation period the survival rate and the economic development of the start ups are analysed (Nandram & Samson 2004, Charney & Libecap 2000, Henry et al. 2003). More sensible data, such as turnover, sales or development of one’s personal income are collected only in some studies (Charney & Libecap 2000, Mitterauer 2003, CRS 2003, Holzer & Adametz 2003). The studies rarely include a cost-benefit-analysis: Mitterauer (2003) carried out a supplementary fiscal analysis: Based on turnover sums estimations for the income tax and social insurance payments were made and the total tax revenue was compared to the total costs of the programme. CRS (2003) estimated the effects of start ups on the

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2 F.i. amount of start ups, survival rates of founded enterprises, costs of the programme, turnover, profit, sales of the enterprises, fiscal impact.
regional economy. Westhead et al. (2001) evaluated the participants’ benefits of the Shell Technology Enterprise programme. Control group designs in the strict sense were not found. Comparison groups, however, were constituted in the following forms: Participants of an EE programme were compared to (former) students of non-entrepreneurship courses; Start up entrepreneurs were compared to graduates from the same programme which were not self-employed (Fueglistaller et al. 2004); Course participants were matched with a group of young entrepreneurs or students with similar features (Westhead et al. 2001, Schamp & Deschoolmeester 2002, Sternberg & Mueller 2004) respectively with participants of a similar programme (Tohmo & Kaipainen 2000). International comparisons are rare (Carayannis et al. 2003, Golla et al.2004, Franke & Luethje 2004).

3.2 Some Examples of Evaluation Studies of Entrepreneurship Education Programmes at Universities

3.2.1 Student Surveys

A written survey was carried out among 5,000 students from 10 German universities, which were supported in the context of the national EXIST programme. Especially, the attitude towards entrepreneurship and the interest in foundation were analysed (BMBF 2002). The Swiss Survey on Collegiate Entrepreneurship is a web-based survey which is carried out among students of universities and universities of applied science in Switzerland every two years. The survey aims at analysing the future plans of the students, especially as far as entrepreneurship is concerned (Fueglistaller et al. 2004). The Maison de l’Entrepreneuriat (Fayolle 2003, pp. 218) combines EE activities of five universities in Grenoble, France, with the goal of increasing the foundation rate. Boissin (2003) analysed changes of their students’ attitude towards entrepreneurship using a questionnaire. In similar studies Klapper (2004) analysed students of the first and second year at the ESC Rouen and Carayannis et al. (2003) students from the ESCM, France, and the George Washington Universit, USA, with a pre- and post-test. Pihkala & Miettinen (2002) combined several standardized tests to analyse attitude changes of students from two Finnish polytechnics.

3.2.2 Alumni Surveys

A study of the University of Linz, Austria, covered the graduates of the last five years. Data about the course of their studies and career and their inclination to found an enterprise respectively about their start ups were collected (Leodolter 2005). In addition to that, student surveys are carried out (Ennoeckl 2002). In a similar study all graduates of the Technical University of Graz, Austria of the last
14 years were analysed with a focus on their current contacts with the university and its staff (Holzer & Adametz 2004). An additional representative survey was carried out among students and scientific staff of the university to determine their entrepreneurial potential (Bauer & Kailer 2003). The Dutch University of Nyenrode also carried out a written survey amongst all alumni with a focus on the rate of foundations, their career as an entrepreneur, the size and the progress of their company and compared the results with the Dutch GEM survey as a benchmark (Nandram & Samson 2004).

3.2.3 Evaluation of Subsidized Entrepreneurship Programmes for University Students and Alumni

In the Young Innovators programme in Baden-Wuerttemberg, German university graduates are financially supported for one year. They also have access to university resources and coaching. Participants and graduates of this programme were interviewed by Sternberg & Mueller (2004) and matched with a control group of young entrepreneurs without financial subsidies in terms of level of innovation, age and company size. The comparison focused on the development of the enterprises (sales volume, F & E expenses, number of employees). The UNIUN project was carried out in Austria and Germany to promote start ups in the environment of universities. Workshops for potential and nascent founders were one component. After a process of administrative selection, these workshops were offered over a period of one year. The workshops were evaluated via interviews with the participants of the years 2001 and 2003. The foundation rate as well as the extent of the entrepreneurial activity were determined. The development of the start ups was analysed by size, turnover and personal forecasts about the future development. Additionally a fiscal analysis included a comparison of the programme costs and the total tax revenue (income tax, social insurance taxes) generated through the start ups (Mitterauer 2003). The American National Foundation for Teaching Entrepreneurship ran several evaluation studies on the effect of the entrepreneurship programme organized by the Koch Charitable Foundation at the Brandeis University. The methods used included seminar room observation, focus groups with alumni, pre- and post-tests with participants, as well as case studies with a non-participating control group (NFTE 2005). The target group of a version of this programme were students of public high schools. This course was evaluated by the Harvard University Graduate School of Education with pre- and post-tests as well as psychological tests. Non-participating students acted as control group (Nakkula 2004). Charney & Libecap (2000) conducted a written survey which included all 2 500 graduates of the Eller College of the University of Arizona from 1985 to 1999. Among them, 450 had attended the Berger Entrepreneurship Programme. At the impact level, the intention to start an own business, the amount of startups as well as the development of these enterprises (sales, employees) were taken into account. The study focused on differences between participants and non-participants. The
CMI’s Connections programme was developed by the Cambridge MIT-Institute (CMI) to foster the entrepreneurial spirit among students. This one-week programme was implemented and evaluated in 2003 at the University of Strathclyde, Scotland. There was no admission selection for the 55 participants. The design included a pre-test and two post-tests to analyse the knowledge transfer and focused on the assessment of personal competences (Lucas & Cooper 2004). Benchmark-data from other participating universities served as a substitute for a control group. The Shell Technology Enterprises Programme offers traineeships for students and graduates in companies in the UK. The STEP-participants of the year 1994 as well as their host organisations took part in a longitudinal study with a written questionnaire in 1997. Students which did not participate in STEP acted as control group. The focus of the analysis was on the analysis of the benefit for the participating students and enterprises (Westhead et al. 2000, 2001). In a longitudinal study amongst graduates of the SME programme of the Vlerick Leuven Gent Management School, Belgium, Schamp & Deschoolmeester (2002) gathered data on the effects of management training on managerial competence and the entrepreneurial behaviour of owners of Flemish SME’s. Young entrepreneurs were matched in terms of age, company size, industry and site and served as control group.

3.2.4 Evaluation of Other Subsidized Entrepreneurship Programmes in Cooperation with Universities

The Irish Genesis enterprise programme of the Cork Institute of Technology is a one-year incubator programme for start ups. The evaluation focused on the rate of foundations and rate of survival and the start up’s sales volume, investment volume, turnover and number of employees. In Ireland, Henry et al. (2003) evaluated the effects of the Technology Enterprise Programme (TEP) in a three-years-study. The evaluation design included a pre-test and two post-tests to allow estimations of the transfer effect and the development of the start ups. An internationally oriented university programme for executives and CEO was organised and evaluated by Leitch & Harrison (1999) in Ireland. The benefit for participants as well as the participating enterprises was analysed using questionnaires several times during and after the programme. Additionally, managers of the enterprises were interviewed and case studies were developed.

4 Evaluation Planning and Evaluation Concepts

During the planning process the questions summarized in Table 1 have to be answered.
<table>
<thead>
<tr>
<th>Cause of evaluation</th>
<th>Triggered by certain incident, Systematically planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation design</td>
<td>With(out) control group(s) (matching)</td>
</tr>
<tr>
<td></td>
<td>Before, during, at the end, after the programme</td>
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<td></td>
<td>Announced or secretly (f.i. mystery shopping)</td>
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<td></td>
<td>Self evaluation or third-party-evaluation</td>
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<td>Evaluation goals</td>
<td>Support of participant’s learning</td>
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<td></td>
<td>Control of the current programme</td>
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<td></td>
<td>Changes in current or future programmes</td>
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<td></td>
<td>Assessment: of participants, coach, training organisation, accommodation etc.</td>
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<tr>
<td></td>
<td>Proving programme effects on different levels: attitude changes, increased knowledge, changed behaviour at the workplace, effect on enterprise level, total economic consequences</td>
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<tr>
<td>Evaluation subject (who evaluates?)</td>
<td>Coach, programme planner, participant, evaluation expert</td>
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<td></td>
<td>External or internal evaluation</td>
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<td></td>
<td>Cooperative Evaluation</td>
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<tr>
<td>Evaluation object</td>
<td>Individual learning progress (intended, unintended)</td>
</tr>
<tr>
<td>(what and who is evaluated?)</td>
<td>Individual change in behaviour (intended, unintended)</td>
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<tr>
<td></td>
<td>Seminar climate, degree of transfer to the workplace</td>
</tr>
<tr>
<td></td>
<td>Programme design (goals, contents, method, time)</td>
</tr>
<tr>
<td></td>
<td>Trainer, training management, programme organisation</td>
</tr>
<tr>
<td></td>
<td>Environment (accommodation, seminar room)</td>
</tr>
<tr>
<td>Source of information</td>
<td>Participants, seniors, colleagues, documents, figures</td>
</tr>
<tr>
<td></td>
<td>Trainer, training institute, principal (contract awarde)</td>
</tr>
<tr>
<td>Evaluation time</td>
<td>Workplace analysis and needs analysis</td>
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<tr>
<td></td>
<td>Goal formulation and programme planning</td>
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<td></td>
<td>During or at the end of the programme</td>
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<td></td>
<td>After return to workplace or later on</td>
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</table>
By differentiating between the functions of "proving", "improving" and "learning", Easterby-Smith (1986) highlights that evaluation must be an integral part of the process of learning and development. Feedback based on evaluation data is a core element of the learning of companies. The importance of feedback loops is also emphasized in concepts of entrepreneurial learning (Young & Sexton 1997, Leitch & Harrison 1999, Fayolle 2004b). Concepts for EE on university level also underline the importance of reflecting and evaluating learning and work experiences (Johannisson 1991).

Evaluation concepts serve to differentiate between the different levels and phases of evaluation as a basis for strategic decisions in planning the evaluation design:

Storey has developed a “Six Steps Model” for the evaluation of SME programmes. The steps are ranked in terms of sophistication. Storey distinguishes between the preliminary stage of "Monitoring" (step 1 to 3) and real evaluation (step 4 to 6). "The difference between monitoring and evaluation is that the latter are attempts, demonstrating analytical rigor, to determine the impact of policy initiatives" (Storey 2000, p. 180). From steps 4 to 6, the main focus is on the comparison with non-participants. Self-selection bias and administrative selection bias are taken into account.

Kirkpatrick’s “Four Steps Model” (1967) distinguishes four chronologically ranked evaluation levels: reaction evaluation (satisfaction of participants), learning evaluation (individual learning success), behaviour evaluation (changes in job behaviour) and results evaluation (outcomes on company level).

Warr, Bird & Rackham (1971) elaborate these levels further in their CIRO -model. They distinguish between Context evaluation (inquiry of the training needs and -goals), Input evaluation (resources used to reach the goals), Reaction evaluation and Outcome evaluation (immediate outcome: change of knowledge and attitude; intermediate outcome: change of behaviour at the workplace; ultimate outcome: effects on company level).

The CAIPO model of evaluation features five starting-points or levels for evaluation: Context, Administration, Inputs, Process and Outcomes. These levels do not substitute each other. The evaluators have to decide about the importance given to each level. "The... framework is intended to distinguish a number of
aspects of a programme or an event, each of which might form the primary focus for evaluation” (Easterby-Smith 1986, p. 46).

The NPI learning cycle has been developed at the Dutch “NPI – Instituut voor Organisatie Ontwikkeling”. The model’s starting point is the difference between the “world of working” (workplace) and the “world of learning” (course, seminar) which causes a “transfer gap”. The NPI model emphasizes the importance of embedding evaluation in an overall planning and learning concept, based on the provider’s explicit programme philosophy. In this model evaluation is part of all phases of the learning cycle (training needs analysis, programme planning, learning process, integration of learning results/learning transfer). Therefore the evaluation concept has to be formulated before the beginning of the programme. When the transfer from the programme to the workplace was successfully completed, the learning cycle can be regarded as completed (von Sassen, no year). Nevertheless, the changes of behaviour at the workplace or as well as in task or working environment again will result in new training needs.

5 Proposals for Designing Evaluation Studies

Include persons affected by the evaluation as soon as possible:

The persons concerned (programme managers, coaches, trainers, participants) should be informed and involved in the goal formulation and the design of the evaluation right from the start. The variety of different viewpoints enables to develop an improved and widely accepted design and easier-to-use tools. The discussion of the focal points of the upcoming evaluation per se influences attitudes and behaviour of the participants.

Consider the target group’s previous experience with evaluation:

Whilst planning the evaluation and choosing its instruments it is advisable to take the target group’s previous experience with evaluation into consideration to avoid resistance.

Develop simple and manageable instruments:

To support evaluation by participants and coaches, the instruments should be designed as simple as possible with regard to usability and comprehensibility (“simple but not easy”). Additionally, instruments for self-evaluation should also be provided.

Estimate costs and benefits of the evaluation:

Evaluation costs (including opportunity costs of evaluators as well as for the target group for the whole process of planning, data collection and feedback) as well as potential benefits of a programme evaluation must be at least roughly estimated as
a basis for decisions about the evaluation and its design. Facing increasing budget constraints, a decision to concentrate the evaluation on certain aspects or levels is more recommendable than a “cover-it-all”-approach which will lead to superficial data.

*Use sophisticated evaluation designs...*

The more instruments of qualitative and quantitative research are combined, the more often the evaluation is conducted (at least pre- and post-tests), and the more evaluation levels are addressed, the more elaborated and valid will be the results. This of course allows to draw more accurate conclusions and to publish evaluation reports which meet the standards of the scientific community. However, temporal and financial restrictions of the evaluation budget as well as different (and partly hidden) goals of the different stakeholder groups are important problems to solve. In this context the purpose(s) of evaluation should be clarified before starting any evaluative activity. One of the first strategic decisions in the planning process is the determination of the evaluation level(s) to be addressed (Easterby-Smith 1986): On the “learning”-level, evaluation should be designed to support learning processes of the participants. A focus on “improving” implies an emphasis on the improvement of the current or future programmes (formative evaluation). A “proving”-focus aims at demonstrating that something has happened as a result of the programme. Evaluation should therefore focus on long term effects including a cost-benefit-analysis, pre- and post-tests and control groups.

*...but avoid “evaluation bureaucracy”*

Combining a number of instruments and sophisticated evaluation designs will enhance the reliability of the results but might reinforce the impression of an evaluation bureaucracy (Hamblin 1974). This can lead to counter-productive consequences such as unwillingness for cooperation in the evaluation process or superficial feedback. Therefore, the chosen evaluation goals and levels always kept in mind, only as many instruments as really needed should be implemented.

*Use evaluation data actively:*

The evaluation data should be used for a continuous external (potential participants, media, public) and internal (contract awarder, participant) marketing. This goes beyond the regular publication of a report of results and underpins the necessity to identify the values and criteria of different stakeholder groups as a basis for selective information (Easterby-Smith 1986).

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