# Learning Needs Assessment in Entrepreneurship Training: a Practical Approach of Competency-Based Assessment

Assessment of Communication Competency in the Context of the

VentureLab Twente Training Program

for Entrepreneurs of High-Tech/High-Growth Companies

By

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# UNIVERSITY OF TWENTE.

**VENTURELAB** TWENTE

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## List of Abbreviations

**CBET**: Competence Based Education and Training

**CV:** Coefficient of Variation

**EC**: Entrepreneurial Competency

**ET**: Entrepreneurial Team

**KSA**: Knowledge, Skills, and Attitudes

**NBIA**: National Business Incubator Association

**NIKOS**: Netherlands Institute of Knowledge Intensive Entrepreneurship

**SD**: Standard Deviation

**VCP**: VentureLab Entrepreneurial Competency Profile

## Abstract

Development of entrepreneurial competencies is fundamental to start-up founders. Special training programs intend to facilitate the acquisition of specific competencies aimed to enable founders to successfully run their business. Frequently, part of these programs is an initial assessment to identify earlier acquired competencies to facilitate the learning process. This work develops such a competency-based learning needs assessment to evaluate initial communication competency of participants at the VentureLab Twente Training Program. Therefore, the theoretical background of competency-based training and education, competency profiles and entrepreneurship competencies is analyzed and evaluated. Based on these insights different assessment methods are identified and compared to each other with regard to their suitability. Subsequently, a learning needs assessment with use of a discrepancy model is developed. The designed assessment measures communication competency of start-up entrepreneurs by means of a role-play video analysis and represents the results on a spider-chart. An inter-rater reliability analysis among the judgments of six trainers of communication competency is done to evaluate the consistency of the rating scale among different assessors. A qualitative evaluation and a statistical analysis confirm the assessment as a valid instrument to measure communication competency for training purposes of startup entrepreneurs.

# 1. Introduction

The majority of newly founded ventures collapses within the first years of existence or fail to grow in long-term and often remain small and less profitable compared to existing businesses. The percentage of failing start-ups fluctuates between 40% and 90% depending on the region and sector (Brinckmann, 2007; Enter, 2006; Peters, Rice, & Sundararajan, 2004; VentureLab, 2010). As especially new firms have high potential to grow and to create employments their success is an important factor of economic growth and welfare. In the Dutch region *Twente* for example 80% of all high-tech companies have less than 10 employees (2006) although the potential for growth and employments is not yet utilized (Blaauw, Groen, Hospers, Kirwan & van der Sijde, 2007). One of the main reasons for that is that founders often do not have the capabilities of managing a company and lack relevant business expertise and competences (Brinckmann, 2007; Cooper, 1985; Enter, 2006; Klocke, 2004; Peters, Rice & Sundararajan, 2004). Under these conditions the lack of entrepreneurial competencies is harmful to the region's and the firm's development and prevents the creation of new jobs (Brinckmann, 2007; Enter, 2006). Within this context the University of Twente founded the incubator organization VentureLab Twente. VentureLab Twente's goal is to support the regional development of high-tech related businesses and among other services it offers educational training in form of an Entrepreneurship Training Program for competency development of entrepreneurial teams.

## 1.1 Problem Description

The participants of the Entrepreneurship Training Program are heterogeneous in terms of experiences, expertise, age, and professions. Some participants already have a business idea but others don't. In order to focus individual learning efforts within their individual development plan it is important to identify individual development needs at the beginning of the training. Therefore, an adequate, objective measuring and evaluation instrument has to be implemented to measure the initial competency level and the competency gap of already acquired entrepreneurial competencies (EC) and the VentureLab Entrepreneurial Competency Profile (VCP). By comparing their competency profile with the VCP participants are able to recognize their development needs and prioritize their competency acquisition in their individual development plan. The main research question which this paper addresses is therefore:

*How is it possible to assess the individual entrepreneurial competency level of participants of the Entrepreneurship Training Program?*

Since the VCP consists of 33 different competencies an all-encompassing assessment would be a complex assessment-center project including multiple assessment methods. This paper makes the first step designing and implementing a competency-based learning needs assessment for entrepreneurial communication competency. Communication competency is essential for entrepreneurs and the success of their venture. It is closely connected to successful negotiation and interaction with stakeholders (Gehm, 2006; Morreale, Osborn & Pearson, 2000; Onstenk, 2003). The questions which this paper is going to address are the following:

Question 1: *Which competency-based learning needs-assessment is most suitable to measure entrepreneurial communication competency?*

Question 2: *Which method is adequate to represent the assessee's level of competency and to compare the personal competency profile with the existing entrepreneurial competency profile to reveal individual learning needs/gaps?*

Question 3: *How can assessees be supported to become aware of entrepreneurial competency strength and deficits to acknowledge the importance further development?*

**Relevance**

Based on the answers to these questions VentureLab Twente is able to assess initial communication competency levels of participants to facilitate the process of acquiring communication competencies. Furthermore, it is possible to use this paper as a guideline to design additional learning needs assessments for other competencies.

The theoretical relevance of this work is to provide an additional value to existing research on competence-based (learning needs-) assessments - especially on entrepreneurial competency assessment. This paper also explains the development of the assessment in detail and may be used as guideline for further theoretically founded, applicable competence-based assessments for entrepreneurship training. Furthermore, it gives indication of how to formulate statements of competence, developing performance indicators and choosing the right assessment methods. Since, the assessment is developed on behalf of VentureLab Twente it also supports the mission to foster foundation of local high-tech ventures and thereby makes a contribution to the economical development of the region Twente.

## 1.2 Structure

The paper is set up in eight chapters. Chapter two deals with the theoretical background of the subject - introducing all relevant concepts as entrepreneurship, competence, competency acquisition, competence profiles, and needs-assessment methods. This includes the process of defining competence

statements, units/competencies and performance indicators as well as the comparison of different assessment methods. In chapter three VentureLab Twente and the Entrepreneurship Training Program are introduced as implementation context of the assessment. Subsequently, the assessment is designed and implemented in chapter four, including modularization of competence and the actual evaluation of the assessment's results. In chapter five an evaluation and discussion of the assessment is conducted, including a statistical analysis of the inter-rater reliability of the scale and its different sub-scales. Chapter six includes conclusions and recommendations for further implementation of the assessment and for the development of a comprehensive entrepreneurial competence assessment. Chapter seven includes all theoretical references and chapter eight includes the appendix with relevant tables, scales and instructions for the implementation of the assessment.

## 2. Theoretical Background

In the following part a deeper analysis of assessment's (practical) context and the theoretical background takes place. The major concepts will be introduced and analyzed in detail. The focus of this chapter lies on combining entrepreneurial learning approaches with competence-based learning theories.

### 2.1. Entrepreneurship

Entrepreneurship derives from the French word *entreprendre* which means 'to undertake' or 'to attempt'. Since, there is no collective definition of an entrepreneur and what that individual does, different views on entrepreneurship and on learning foci emerged (Zachary & Mishra, 2010).

Today, different entrepreneurship programs concentrate on different aspects of entrepreneurship and therefore do have different learning outcomes (van der Sijde, Ridder, Blaauw & Diensberg, 2008). One may infer to entrepreneurship as 'an active process of identifying business opportunities and sizing these opportunities by gathering and controlling resources to create an organization that offers goods or services to the market involving an innovation and growth perspective' (Brinckmann, 2007, p.14). This approach sees entrepreneurship as a process of realizing opportunities. It is based on a theoretical approach of introducing these opportunities to the market. The learning outcome of this approach would be for example, more understanding of relevant processes and their resources. Another, more practical outcome of this approach is the elaboration of resources in an business plan (van der Sijde, et al., 2008).

Another, more practical approach sees entrepreneurship as the process of starting a new company. In this case, entrepreneurship focuses on acquiring financial resources and promoting one's business idea to possible investors (van der Sijde, et al., 2008).

But entrepreneurship may also be seen as a set of competencies (Hannula & Pajari-Stylman, 2008). The process of entrepreneurship is controlled by the entrepreneur who engages in entrepreneurial behavior to advance it. Entrepreneurial behavior is a set of behaviors, for example opportunity seeking and grasping, solving problems creatively, taking responsibility, effectively networking, and using judgment to take calculated risks (Hannula & Pajari-Stylman, 2008). As these actions depend highly on the competency of the entrepreneur entrepreneurship may also be regarded as driven by a set of competencies (Onstenk, 2003; van der Sijde, et al., 2008). This article will concentrate on the competency perspective of entrepreneurship since the background of the learning needs assessment takes place in a competence-based training program.

### 2.1.1. Learning in Entrepreneurship

Just like the definition of *entrepreneurship,* the definition of *learning* lacks consensus (Pont & Sonnet, 2003). The behaviorist perspective sees learning as 'a relatively permanent change in behavior that results from practice' (Atkinson, Atkinson, Smith & Bem, 1993). This definition emphasizes three aspects of learning. The statement that learning is 'relatively permanent' indicates it has long lasting nature. This differentiates changes in behavior which result from learning from other short-time changes. The second aspect of the definition concentrates on 'changes in behavior' of the learner. These changes may result from neurological evaluation and memorizing processes in the brain and behavior is consequentially seen as a result of these processes. The last aspect of this definition concentrates on learning as a 'result from practice' which characterizes learning as interaction with the environment. The cognitive view of learning minimizes learning to relatively permanent change of the learners knowledge which results in behavioral changes (Mayer, 2008). The constructivist view sees learning as a result of experiences and interactions with the environment. In this process previous knowledge is connected with newly made experiences which results in understanding (Wirth & Perkins, 2007). What all these definitions have in common is that learning results in changes; whether they are behavioral, cognitive or in understanding. In terms of competency-based learning the outcome of the learning process are competencies, which include changes in knowledge (cognitive), skills (physical, behavioral) and attitude (affective) and therefore embrace the earlier made definitions with the addition of attitude. As such, learning can be also be seen as a process of competency acquisition and development (Tjepkema, 2003; Voorhees, 2001).

In general three types of learning can be differentiated: formal learning, non-formal and informal learning (Eraut, 2000). Non-formal learning takes place in situations where the learning process is not structured or institutionalized. It happens intentionally when a situation is specifically used as source for learning, for example a business visit or a conference. When learning happens unintentionally for

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example as a byproduct of experiences or working learning is called informal learning or experiential learning (Lans, Wesselink, Biemans & Mulder, 2004; Pont & Sonnet, 2003).

Formal learning takes places in controlled settings which are intended and designed to support learning, as schools, universities, and also incubator organizations. For entrepreneurs, formal learning provides the opportunity to reflect on their entrepreneurial behavior and provides possibilities to obtain generic competencies. However, the border between non-formal and formal learning is not fixed - both terms may be seen as opposed extremes of a continuum (Tjepkema, 2003).

Research in entrepreneurial learning is still in its beginnings (Minniti & Bygrave, 2001; Ravasi & Turati, 2005). Whereas a lot of research in entrepreneurial learning focuses on informal learning and the influence of personality characteristics (as risk-taking and decision making) formal entrepreneurial learning became more attention in the last years (cf. Eraut, 2000; Lans, et al., 2004; Minniti & Bygrave, 2001; van der Sijde, et al., 2008). A reason why formal learning did not get as much attention seems to be that non-formal and informal learning is preferred by most entrepreneurs because it is regarded as quicker and more specific. Formal learning is seen as unpractical, theoretical, and seems to be too mono-disciplinary. Also unawareness, financial aspects and wrong perception of critical success factors seems to play a role (Lans, et al., 2004). Increasing dissatisfaction with the standard learning model of 'teaching business' led to a change in business and entrepreneurship education (Browne & Harms, 2004). To adapt to the demands of non- and informal learning some educational institutions adjusted their programs to a more learner-centered approach in which the focus lies on learning entrepreneurial competencies. These approaches provide the possibility to develop entrepreneurial competencies in authentic environments along with the need for self-directed learning (Onstenk, 2003). Furthermore, a competence-based learning system makes it possible to design learning as authentic and practically relevant as possible by letting learners integrate their entrepreneurial experience into the learning process (Hannula & Pajari-Stylman, 2008; Onstenk, 2003).

### 2.1.2 Business incubation

Business incubators are organizations which 'nurture the development of entrepreneurial companies, helping them survive and grow during the start-up period, when they are most vulnerable' (NIBA, 2010). Their function is to provide a controlled work environment to support 'a collegial climate for the training, support and development of successful small entrepreneurs and profitable businesses' (Al-Mubaraki & Busler, 2010, p. 2). To support the growth of start-ups incubators may offer work space, communicative or administrative assistance, access to critical professional services or training to the entrepreneurs (Al-Mubaraki & Busler, 2010). The National Business Incubator Association (NBIA) distinguishes between two different categories of incubators: non-profit and for-profit incubators (NIBA, 2010). Most

incubators are non-profit organizations which are usually connected to a governmental, social or educational institution. Non-profit incubators usually demand less equity for their services than for-profit incubators. 'Their aim is to contribute to regional or local development' (Aernoudt, 2004, p. 132). In contrast to non-profit incubators for-profit incubators are mostly private financed and expect returns for their services as shareholders of the start-ups (NIBA, 2010). Because the distinction in non-profit and for-profit does not indicate their actual way of operation another distinction between two main focuses of incubator efforts was made: the focus on the development of the business itself or on the development of the entrepreneur (Bergk & Norrman, 2008). Incubators which focus on the development of entrepreneurs skills can also be seen as educational organizations (Cooper, 1985). Since, competency development of the entrepreneur becomes more and more important (Lans, Hulsink, Baert & Mulder, 2008) the educative role of incubators got more attention by research recently (Bergk & Norrman, 2008; Peters, et al., 2004).

Fayolle and Klandt (2006) look at entrepreneurial education from three different perspectives: from the cultural (or state of mind) perspective, from the behavioral perspective and from a perspective which creates *specific situations*. Education which focuses on the development of the cultural/state of mind matters of entrepreneurship encompasses the development of relevant values, beliefs, and attitudes. Education which focuses on behavioral aspects of entrepreneurship aims to develop specific skills as opportunity seeking, decision making or social skills. Education which aims at creating specific situations concentrates on the development of a startup itself, for example by following a business plan. In the last years the educational approach changed from being concentrated on creating specific situations to a more cultural and behavioral perspective (Fayolle & Klandt, 2006). The combination of cultural and behavioral aspects resulted in a competence-based approach of entrepreneurial education (Lans, et al., 2008).

## 2.2. Competence

In the last years probably no other terms have coined the debate in occupational education more than *competence* and *competency* (Delamare Le Deist & Winterton, 2005). Although, both terms are widely spread they refer to an unclearly defined construct whose meaning differs between and within nations, researchers, and institutions. Yet, the difference of competency and competence is issue of various discussions. Despite both terms have different meanings they are often used interchangeable (Moore, Cheng & Dainty, 2002). Following Delamare le Deist & Winterton (2005) the term competence refers to a functional area, the general ability of what someone should be able to do. It can be seen as a broader concept which includes performance outputs and behavioral inputs. Competency, in turn,

alludes to the behavioral aspect of the construct; the specific way of how something should be done. In other words: *competence* can be interpreted as the potential to perform and *competency* can be seen as the actual performance (Delamare Le Deist & Winterton, 2005). Consequentially, competence can be broken down into smaller units/competencies (Mulder, 2007). The following paragraph is going to introduce a deeper definition of the concept competence.

Mostly, competence is referred to as a construct of knowledge, skills, and attitudes - the so called KSA (Winterton, Le Deist & Stringfellow, 2005). Skills embrace the psycho-motoric domain and include certain physical or manual behaviors. Knowledge in turn refers to cognitive or mental skills, whereas attitude refers to affective characteristics like feelings, intention or emotional areas (Rychen & Salganik, 2000). Competence may therefore be described as '*the ability to successfully meet complex demands in a particular context. Competent performance or effective action implies the mobilization of knowledge, cognitive and practical skills, as well as social and behavior components such as attitudes, emotions, and values and motivations'* (Rychen & Salganik, 2003). Based on this approach Delamare Le Deist & Winterton (2005) worked on a holistic framework which defines competence. They state that the understanding of the interaction between knowledge, skills and social competences is necessary to create a general typology. This approach differentiates competences in regard to their context: occupational and personal competences which can be seen as conceptual or operational competence (Fig. 1). Furthermore, they identify four different dimensions cognitive-, functional-, social-, and meta-competences which cover other aspects of earlier definitions. Cognitive competences include aspects as knowledge and the development of intellectual abilities (Winterton, et al., 2005). Functional competences refer to the skill or the know-how aspect and include psycho-motor and other applied skills. It can be measured in terms of speed, precision, procedures, or techniques which are used to accomplish a certain task (Winterton, et al., 2005). Social competence 'describes the willingness and ability to experience and shape relationships' and includes mainly attitudinal aspects (Delamare Le Deist & Winterton, 2005, p. 38). It refers to the affective domain and includes emotionally characteristics as values, appreciation, motivation, and attitudes (Winterton, et al., 2005, p. 18). Following the authors 'meta-competence is […] different from the other three dimensions since it is concerned with facilitating and acquisition of other substantive competences' (Delamare Le Deist & Winterton, 2005, p. 39). Meta competence can be seen as a superior competence which influences the acquisition of new competences - a general ability to attain cognitive-, functional- or social- competences.

|  | Occupational | Personal |
|---|---|---|
| Conceptual | Cognitive Competence | Meta Competence |
| Operational | Functional Competence | Social Competence |
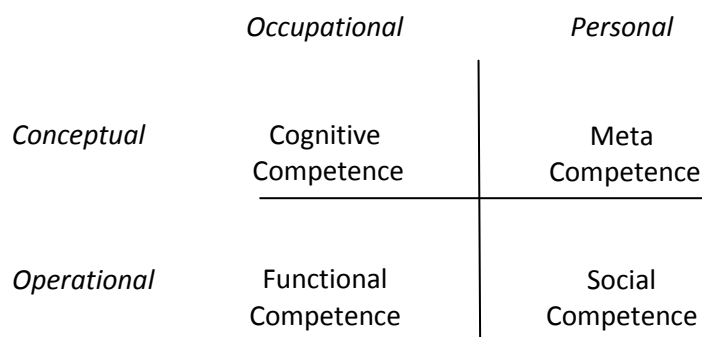
**Fig.1** Typology of Competence (Delamare Le Deist and Winterton, 2005)

The typology of Delamare le Deist and Winterton (2005) is based on the KSA approach. However, the typology does not differentiate between different elements of competence and competency. As the main literature of competence-based assessment still uses the KSA approach his work also follows the KSA approach on competency level.

### 2.2.1. Entrepreneurial Competences

To find adequate application for competence in the entrepreneurial context Brinckmann (2007) developed a concept of 'entrepreneurial-management competence'. The concept distinguishes between three superior domains of competences: 'general entrepreneurial competence', 'social competence' and 'functional competence'.

On first sight, Brinckmann's (2007) model results in competence dimensions which seem similar to the dimensions used in the typology of competence by Delamare Le Deist and Winterton (2005). However, there are significant differences. The general entrepreneurial competence dimension includes conceptual abilities which also can be found in the cognitive competence domain. The social competence domains are congruent in both models. For functional competence a significant difference can be found: whereas Delamare le Deist & Winterton (2005) have an extra domain for knowledge intensive competences (cognitive competences), Brinckmann (2005) includes most of these aspects in the 'functional competences' domain. Furthermore, Brinckmann does not include the meta-competence dimension. This can be explained by the fact that Brinckmann does not focus on the process of acquiring entrepreneurial competencies but rather determines which competencies have to be present to successfully manage startups. The concept of meta-competences comes from a more educational perspective and concentrates on the actual development and training of competencies. This could explain why Brinckmann did not include meta-competences in his research.

## 2.3. Competence Based Learning Approaches

Acquisition of professional competence is the main goal of competence-based education and training (CBET). This educational approach was developed to answer the demands for a more vocational orientated education - a bridge between traditional education and job requirements (Guthrie, 2009; Harris, Guthrie, Hobart & Lundberg, 1995). The intended outcome of CBET is derived directly from practical requirements and merged to a competency profile - whereas the traditional education is more contend or input-focused (Burke, 1989; Tritton, 2008). This paragraph introduces relevant concepts from CBET. At first, the process of acquiring professional competence is introduced. In the following the theoretical background of competency profiles and different assessment methods are introduced.

### 2.3.1. Competency Acquisition

People who are competent show superior job performance than people who are regarded as incompetent (Schofield & McDonald, 2004). The difference between competent and incompetent people becomes clear by examining the actual process of competency acquisition. To exemplify the learning process from *being not competent* to *being competent* the conscious competence model was developed (Fig. 2). Its origin is unknown and ranks from the ancient philosophers (Confucius or Socrates) to versions from the 20th century. Gordon Training (Adams), Howell (1986), Whitmore (2002) and Maslow (Chapman, 2001) are frequently cited sources for this model. Despite the variance of possible sources all mentioned models have these four stages in common:

1. Unconsciously unskilled/incompetent
2. Consciously unskilled/incompetent
3. Consciously skilled/competent
4. Unconsciously skilled/competent.

In the context of business training Whitmore's (2002) introduces the conscious competence learning model in form of a circle. Learners begin with the first stage. Being unconsciously incompetent means that learners are not aware of an existing deficit of a relevant competency ('you do not know what you do not know').

|  | **Unconscious** | **Conscious** |
|---|---|---|
| **Incompetent** | **Stage 1**: The learner is not aware of an absent skill/ competency | **Stage 2**: The learner is aware of an absent skill/ competency |
| **Competent** | **Stage 4**: The learner performs a skill/competency without actively working on it | **Stage 3**: The learner is actively working to acquire a skill/competency |
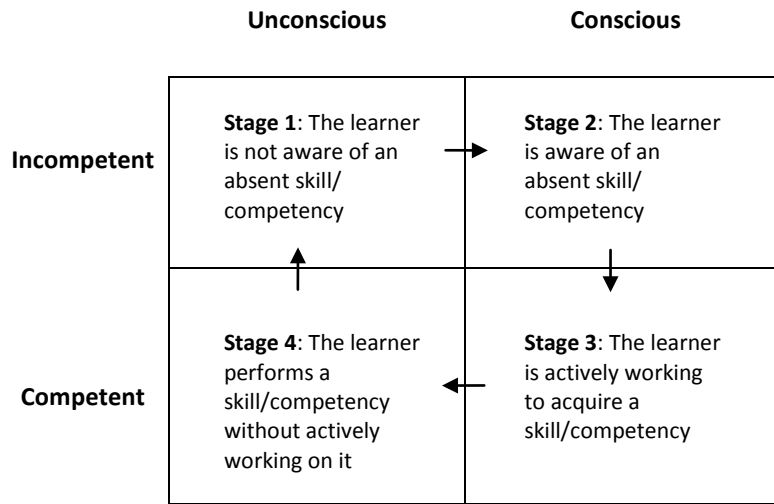
**Fig.2.** Competence Learning Circle (Whitmore, 2002)

After being aware of the competency lack, learners move on to stage 2 and can be regarded as *consciously incompetent*. Here, learners become aware of his existing or non-existing competencies ('you know what you don't know'). In this stage the individual strength and weaknesses become visible. However, learners still show low performance because of their inability to use their strength. When learners acknowledge their individual deficits they also realize that improving their strengths and weaknesses will enable them to act more effective and efficient. Through engaging in learning actions learners gain competency and move forward to stage 3, being consciously competent.

Learners are consciously competent when they are able to perform in a relevant context sufficiently. In this stage they are aware that they are competent but still have to use a lot of effort to perform the newly acquired skill. After continuing practice learners will be able to reach the fourth stage of the competence learning cycle. In this stage learners are able to teach their competency to others. However, they might experience difficulties because the competency might already be largely instinctual (Chapman, 2001).

The unconscious competence stage is the actual goal of this process. Learners have achieved a stage in which they perform automatically. A good example would be typing: first learners have to search for every single letter on the keyboard but later on they can write without thinking consciously about it. However, being unconsciously competent also has a shortcoming: performing automatically can result in lower performance when the circumstances change. From time to time learners have to follow the competence learning circle again to keep their competencies up to date without risking to slip in to the first stage again, unconscious incompetence (Whitmore, 2002). To give learners indication of what is

expected and when they reach the conscious competence level learning objectives of CBET are demonstrated in competency profiles. This is done by modularization: by detailed statements of competences as well as their mastery levels to differentiate individual performance standards.

### 2.3.2. Modularization of Competence

Competence statements can be modularized into competence definitions, competencies, elements and performance criteria. This so called horizontal modularization enables a more differentiated definition of requirements and will be introduced in the following paragraph.

To develop adequate definitions of competence Burke (1989) suggests describing competence in general terms. A correct definition of competence has to describe a condition in which somebody is 'being able to perform whole work roles to the standards expected in employment in real working environments' (Burke, 1989, p. 25). *Standards* in this context refer to statements about *how* competence has to be performed. This may include the presetting of a certain procedure, a statement about dimensional accuracy, correctness/accuracy of procedures, time involved or quality specifications (Burke, 1989). Competence consists from units. A unit is the smallest part of a competence that can be assessed and contains different elements of skill, knowledge or attitude aspects (Burke, 1989). Following Mulder (2007) units may be defined as competencies, since competencies may be seen as smaller parts of competence (Fig. 3). Elements describe key-requirements which a person has to be able to do in a certain occupational context (Wolf, 1995). Elements are connected to performance criteria. Criteria are statements by which may be judged whether the assessee can be regarded as competent (Wolf, 2001). The main difference from performance criteria and elements is that criteria describe certain activities or quantities/qualities which have to be performed successfully (Burke, 1989). Their emphasis lies on verification if a person is competent.
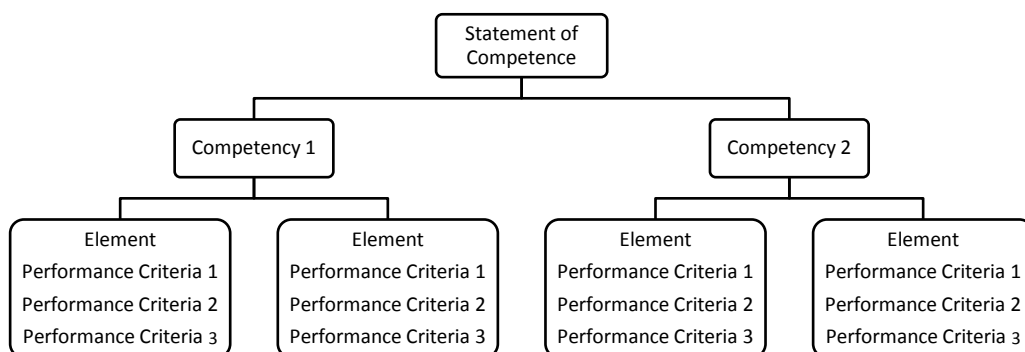


**Fig.3.** Structure of Competence (Burke, 1989)

Vertical modularization refers to the level of competency mastery. Different approaches distinguish between three to seven mastery levels of competence (cf. Clarke, 1997; Denton, 2008; Dreyfus & Dreyfus, 1980; Pickett, 1998). All of these approaches have in common that the levels are connected to certain standards which demonstrate the development process from less-skilled to expert-skilled performer. Depending on its context an approach which is based on three levels may be more appropriate than one which is based on seven levels. Since the VCP does not include a classification in mastery levels it is appropriate to implement them. Dreyfus & Dreyfus (1980) introduced a wide spread model which includes five levels of skill acquisition. It explains the process of competence development by using five levels: novice, advanced beginner, competent, proficient practitioner and expert (Dreyfus & Dreyfus, 1986).

Level 1: The characteristics of skill-mastery on *novice* level include the usage of oversimplified rules which are not bound to the situational context. Furthermore, novices are not aware of what they don't know which shows the parallel to the first stage of the competence learning cycle (Fig.2) which leads to the fact that they cannot differentiate performance by quality (good/poor) or relevance. Novices often treat heuristics as dogmas, for example nodding during a conversation is important in a lot of cases but too much of it may also be dysfunctional.

Level 2: *Advanced beginner* is the follow up stage of novice. Advanced beginners have more experiences then novices and start to be able to distinguish good performance from poor performance. Furthermore, advanced beginners are able to use situational judgment - they begin to decide when a certain rule becomes relevant. However, advanced beginners still lack insight into the whole situation.

Level 3: *Competent performers* start to prioritize possible behavior and are familiar with standardized procedures. Insight into the situation as a whole or in terms of long-term goals is growing. Elements of competence begin to become subconsciously and some of the action is being intuitively competent.

Level 4: *Proficient practitioners* are skilled and experienced within a certain task that a great part of the competency is subconsciously performed. Intuitive competent behavior and quicker decision making which incorporates consequences for long-term goals and the holistic situation is applied. Relevance of actions or behavior within a situation is known and deviations of these are perceived.

Level 5: *Experts* no longer rely on rules or guidelines. They are able to perform intuitively and subconsciously using tacit understanding of a given situation to understand it. Conscious analysis only happens in new situations or when problems are encountered.

### 2.3.3. Competency Profiles

All CBETs are based on multiple, modularized competences which are gathered in a competency profile. It represents a set of competences, competencies and associated behaviors which is directly

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linked to the professional context and provides a validated, systematic description of professional activities. It consists of different key competences which contain various sub-competencies (Kroon, 2008; van der Klink & Boon, 2002) and represents the ideal combination of knowledge, attitude and skills for superior performance (Gorsline, 1996).

Furthermore, a competency profile also serves other needs. On the one hand it can be seen as a list of functional requirements (competence standards) which are demanded by the work context and have to be achieved by the learner to be regarded as competent in a certain domain. On the other hand, particular competencies can be interpreted as learning objectives which provide orientation during the learning process. Another purpose is to enable participants of a CBET to show their competency level and also their development towards individual competencies until they finally fill in their aspired competency sets (Straka, 2004). Competence standards represent complex constructs which can be divided into units/competencies (Burke, 1989; Lans, et al., 2008; Mulder, 2007) each focusing on elements as knowledge, attitude or skill. Following the typology of competence predominant elements coin competences so that they can be divided into functional, cognitive and social competences (Delamare Le Deist & Winterton, 2005). From these elements the performance criteria are derived. Performance criteria are declarations by which the assessee's performance of a certain competency-related activity is judged (Wolf, 1995). These criteria have different forms than statements because the emphasis lies on the verification of a person's competency. To assess competencies a list of different competency-related criteria enables the assessor to judge the level of competence (Wolf, 1995)

Literature differentiates between different approaches how competency profiles may be developed: conventional approaches, expert consultation, future orientated elaboration of professions and new approaches which are based on key competences and core problems. All of these approaches use a different scope of analyzing professional practice in the context of education or training (van der Klink & Boon, 2002).

### 2.3.4 Competence-Based Assessment

Competences are complex constructs consisting of knowledge, skills, and attitude. This also affects the complexity of assessment procedures which often makes it appropriate to combine different methods to an assessment center. In this paragraph an introduction to competence-based assessment methods and theory is given. Afterwards, different methods will be evaluated and appropriate methods to assess communication competence will be selected.

Gnahs (2007) identifies four different categories of assessment methods: oral/written examination, observations, product assessment or a combination of some of them. Whereas oral examination can be done as an interview, written examination is carried out on paper via a questionnaire or a standardized

test. Observation methods focus on the learning process itself as indicator for competence acquisition and may include simulations of certain tasks or situations. Product assessments include evaluation of competency related evidence, for example a portfolio or a product of work which demonstrates the relevant competency. A combination of different methods would be an assessment center. In an assessment center different methods are used to get a holistic view on the competencies of the assessee. Especially, when the combination of attitude and knowledge aspects is important, a multiple-method assessment center combining qualitative (e.g. interview or role-play) and quantitative methods (e.g. multiple-choice test) is often appropriate.

Fletcher (2000) introduces different methods which can be allocated to the four mentioned categories (Table 1). Since, different methods concentrate on different elements of the KSA model it is necessary to evaluate the strength and weaknesses of each assessment category and method (Fletcher, 2000). This evaluation can be found in appendix 8.1.

**Table 1**: Assessment Categories and Methods (cf. Fletcher, 2000; Gnahs, 2007; Van Kleef, et al., 2007)

| Oral/Written examination | Observation | Product Assessment |
|---|---|---|
| Oral Examination<br>- (un)structured, one-to-one/panel interview<br>Written Examination<br>- multiple-choice<br>- true/false<br>- matching<br>- fill-in-the-blank<br>- short answers<br>- essay<br>- situation based-problem solving<br>- standardized exam | - Simulation<br>- Role Play | - Work sample<br>- Portfolio |

*Learning-Needs Assessments*

Learning needs assessments are designed to demonstrate the gap between the current condition and the desired condition to create awareness and comprehension for relevance of learning matters (Khan & Naish, 2004). The learning needs assessment which has been developed in this article has the purpose to reveal participant's initial competency level of communication competency in order to determine the focus of the individual learning effort. Regarding the fact that the training uses a competency profile which contains multiple key-competences and sub-competencies it is important to determine the right fit of competency and assessment method. Since, entrepreneurship requires multidisciplinary inputs (Brinckmann, 2007) a general learning needs assessment of entrepreneurial competencies is as comprehensive and should cover aspects from all relevant disciplines of the VentureLab Entrepreneurial Competency Profile.

### 2.3.5 Discrepancy Model of Needs-Assessments

In the context of competence-based educational/training purposes the term *assessment* serves as umbrella term for different kinds of tests to measure and evaluate the learners performance of certain competencies (Brown & Knight, 1995). A more specific form of an assessment is a needs assessment. Needs assessments are approaches to study the gap between the current condition and the desired condition (Smith & Ragan, 2005). The gap between both conditions is called *need*. There are various models of needs assessments but 'there is no […] model or conceptual framework for needs assessment that has been universally accepted and there is little empirical evidence of the superiority of one approach over another' (Witkin, 1984, p. 29). However, models differ in terms of their application. Within the context of educational design Smith and Ragan (2005) differentiate between three types of needs-assessment which serve different purposes. The first one is the problem-model (or crisis-model) which assesses what is needed to solve an identified problem. The second type of needs assessment is the innovation model. It verifies if new learning goals should be developed and implemented to the curriculum. The last model is the discrepancy model. It assesses the discrepancy between learning goals and current instructional methods (Smith & Ragan, 2005). Through slight adjustments it reveals the learners initial qualification and enables comparison with a desired standard, e.g. competencies (Grant, 2002). In the context of competency development discrepancy needs-assessments therefore identifies the gap between the existing competency level and desired competency level of the learner which represents the 'learning need' (Khan & Naish, 2004; Miller & Osinski, 2002). A learning needs assessment therefore may be regarded as an assessment which attempts to 'identify the gap between existing knowledge, skills and attitudes and those that are needed in order to carry out […] work appropriately' (Khan & Naish, 2004). As every competency-based assessment refers to competencies as desired standard or condition, every competency-based assessment may be applied as learning needs assessment using the discrepancy model. Therefore, the discrepancy model is most appropriate to develop and evaluate a competency-based learning needs assessment.

Smith & Ragan (2005) list different reasons when to conduct needs assessments. One reason which is important in the background of competency development is to assess whether there are learning goals that are not being met by the learners. Originally, this is done to adjust instructions but in the context of learning needs assessments it may be used to identify the actual competency level of learners. Another motive to conduct needs assessments is to make sure that existing instructional interventions are selected effectively (Smith & Ragan, 2005). When learners are already regarded as competent in a certain context they do not have to get further training.

As consequence for the competence learning circle the focus of learning needs assessments lies in facilitation of learning processes from being unaware of one's incompetence (stage 1) to being aware of one's incompetence (stage 2). Unfortunately especially, this step is often neglected by trainers or teachers because they often assume their trainees being already in stage 2, consciously incompetent. This fundamental mistake is often responsible for the failure of trainings and teachings: learners who are unconsciously incompetent do not recognize the significance of the content of the curriculum and do not perceive it as relevant because the need for learning cannot be seen (Whitmore, 2002). Therefore, in the stage of unconscious incompetence it is essential to support the awareness of competency deficits and the need of training/learning. By conducting a learning needs assessment the relevance of learning becomes clear to learners with the consequence that 'they know what they do not know' and become consciously incompetent. The purpose of the assessment which is about to be developed is geared to the initial three main questions of this paper and is this thus threefold. It has to

a. Visualize the learner must be able to do after following competency level of the individual

b. compare the personal competency profile with the existing entrepreneurial competency profile to reveal individual learning needs/gaps

c. support the learning process which closes the gap and to facilitate the progress from being unconsciously incompetent of being consciously incompetent

The discrepancy model of needs assessments (Fig. 4) is an ISD model - instructional systems development model - and includes five different steps to develop and implement needs assessments (Smith & Ragan, 2005).

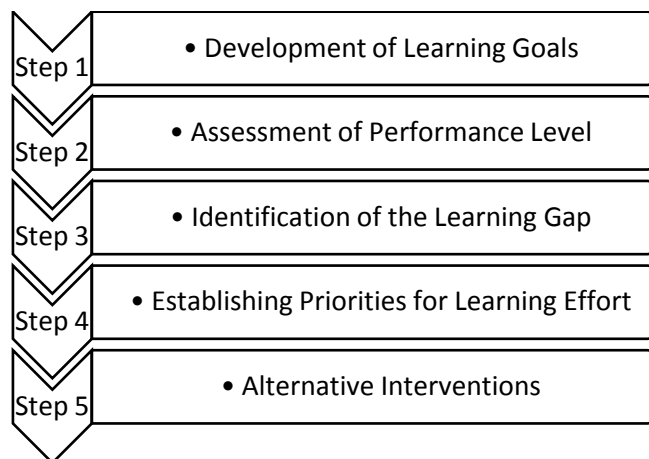| Step 1 | • Development of Learning Goals |
| Step 2 | • Assessment of Performance Level |
| Step 3 | • Identification of the Learning Gap |
| Step 4 | • Establishing Priorities for Learning Effort |
| Step 5 | • Alternative Interventions |

**Fig.4** Discrepancy Model of Needs Assessment (cf. Smith & Ragan, 2005)

In the first step a list of learning goals has to be developed. Learning goals determine what the learner must be able to do after following a training program. In a competence-based training these

goals may be presented in terms of a competency profile. The second step is to assess the current level of performance of the learner. This indicates whether the learning objectives are already reached by the learner or not. This step includes the selection of an appropriate assessment method and its actual implementation. In the third step the actual gap will be identified. Therefore, the individual results of the learner will be compared with the learning goals. The fourth step is the establishment of priorities. Not all gaps or needs are equally important and often it is not possible to work on all of the gaps at the same time. Therefore, different criteria may help to determine which gaps should be attended first. The size of the gap, the importance or consequence of the goal and the probability of reducing the gap may be regarded as criteria. The fifth step of a discrepancy needs-assessment concentrates on determining which gaps are instructional needs and which are most appropriate for design and development of instruction. The focus of this step lies on the reason why the gap exists. As Smith and Ragan (2005, p. 48) state 'one of the biggest mistakes […] is assuming that instruction is the solution to all performance problems'. Therefore, in some cases it may be important to analyze whether instruction, training, coaching or alternative interventions may be the right choice to minimize the gap. In this context step five refers to the question if training is the right method to close the existing gap or if other alternatives are more appropriate.

## 3. Context: VentureLab Twente

In order to support firm growth and to counteract unsuccessful founding of new ventures in the region Twente the University of Twente founded the incubator organization VentureLab Twente. As a business incubator VentureLab Twente supports the development of entrepreneurial ventures to help them grow and survive the critical start-up period (Al-Mubaraki & Busler, 2010). VentureLab Twente is a non-profit incubator organization which is funded by the European fund for Regional Development, the province Overijssel and the region Twente. It can be regarded as a university-linked technology incubator as it is closely connected to the University of Twente and concentrates on the development of companies from the high-tech sector (cf. Aernoudt, 2004; Maxwell & Lévesque, 2010; Peters, et al., 2004). As university-linked technology incubators have the role to assist the development of high-technology start ups and also to facilitate the flow of knowledge and funds between the university and industry their benefit is mutual: they support and enhance the regional economic development and they support their own academic research by using the incubator and start-ups as sources for research (Maxwell & Lévesque, 2010). Among other services VentureLab Twente offers a competence-based training which enables founder teams to gain multidisciplinary entrepreneurial competencies to support the growth of their company. Before participants are admitted to the entrepreneurship training they

have to pass an affiliation assessment where their motivation, ambitions, and ideas are evaluated. Requirement to participate in one of VentureLab Twente's training programs is an existing business idea or a strong ambition for business growth in the context of high-tech ventures. The program is addressed to individuals or teams which plan to start a new business or want to support the growths of an existing business. When starting the training program their pre-expertise in entrepreneurship differs: whereas some participants do not have any experience with entrepreneurship others already run their own companies. The average participant is male, has an age between 20 and 65, mostly has a technical background, and a degree in higher education (HBO or higher). The predominant nationality is Dutch (VentureLab, 2010). What distinguishes VentureLab Twente from most other technology incubators is that it concentrates on the competency development of entrepreneurial teams. The reason for that is that founder teams are more likely to share multidisciplinary competencies which are significant for the company's growth. Therefore, VentureLab Twente focuses on the development of entrepreneurial teams instead of individuals (Enter, 2006). The training includes weekly meetings with professional supervision, individual coaching, networking opportunities, and competency development based on an individual development plan. As participants have heterogeneous development needs the program offers flexible adaptation to individual- or team-development needs. Depending on the individual development plan teams decide along with their coaches in which trainings they want to participate. Several training groups start during the year with ca. 30 participants each which sums up to about 200 participants as of October 2011. The training is based on an entrepreneurial competency profile (appendix 8.8) which includes 33 entrepreneurial competencies (EC). The goal of the training is to help the participants acquire certain competencies which enable them to start or grow their own business.

## 4.  Design

Based on the earlier acquired information about competency assessment the design of the assessment takes place in this chapter. Therefore, the discrepancy model which was described earlier is implemented.

### 4.1  The Discrepancy Model

In the following part the discrepancy model which is described in 2.3.5 is used to design the assessment.

#### 4.1.1    Step one: Identifying Competency-based Learning Goals

In step one of the discrepancy model the identification of learning goals is central. Learning goals can be seen as the desired state or standard which should be reached after participating in the educational program (Smith & Ragan, 2005). In the case of competency-based training the *desired standard* is

defined in the mentioned competency profile. The VCP includes 33 entrepreneurial competencies which entrepreneurs or entrepreneurial teams should cover. They can be seen as the desired standard which has to be achieved by the learners and therefore give indications for learning goals. The VCP was constructed by different approaches. Different experts from different scientific and entrepreneurial contexts were consulted for their expertise to develop the profile, its competencies and their performance indicators. Another input for the competency profile was derived from a conventional approach and is based on the work of Brinckmann (2007). The results of both approaches were combined and introduced in the VentureLab Entrepreneurial Competency Profile (appendix 8.8). At the moment the VCP does not only include adequate definitions of competencies but rather a mix of broader performance indicators, learning goals, and specific tasks. This makes an adjustment of competence standards inevitable to infer to performance indicators. Since, the development of standards and assessments for all 33 competences would go beyond the scope of this article the process will be exemplary demonstrated in the following. The focus of this paper will therefore lie on Entrepreneurial Communication Competence. The original definition of Entrepreneurial Communication Competence of the VCP can be found in Table 2. This competence will be (re-)defined, analyzed in detail and allocated to possible assessment methods.

**Table 2:** Abstract from the VCP - Communication Competence

The entrepreneurial team:

- employs a good discussion technique

- has attention for the configuration, organization and structure of a presentation and utilizes appropriate presentation tools

- conveys information in a systematic, coherent and gripping manner, taking into consideration discussion partners, listeners and readers,

 in such a way that the message comes across to them and is understood

- is able to defend its opinion, needs and interests in a non-offensive, tactful manner

- is capable of building trust, inspiring parties concerned and convincing them of its standpoints

*Modularization of Entrepreneurial Communication Competency*

Horizontal Modularization

Competences can be distinguished into cognitive, functional social and meta-competences (Winterton, et al., 2005). The most essential part of social competences in the context of entrepreneurship is communication competence (Brinckmann, 2007). A more general definition sees communication competence as the 'ability to choose a communication behavior that is both appropriate and effective for a given situation' (Spitzberg & Cupach, 1984). This definition includes nearly all of the mentioned aspects of how competence statements have to be expressed following Burke (1989): the ability (cf. choosing) and the way how the ability has to be carried out, namely effective and appropriate

(cf. standard) and the connection to the context (*given situation*) is present. An appropriate description of the work role is missing, in this case 'conducting conversations'. Since the entrepreneur has to be able to take over the role to conduct and moderate conversations the statement of Spitzberg & Cupach (1984) has to be slightly extended. To be able to assess communication competence the competence statement has to be adjusted for the context of entrepreneurial competences as it is very broad. Therefore, a closer look has to be taken on the actual signification of the definition. The term *appropriate*, in this context, refers to social relation of the communication partners, 'reflects tact or politeness and is defined as the avoidance of violating social or interpersonal norms, rules or expectations'. Effectiveness refers to the actual function of communication and indicates whether the communication goals were achieved. This may include time and energy consumption as well (Spitzberg & Cupach, 1989). Effectiveness of the communication may depend on information richness of the communication medium which is chosen. Information richness refers to the 'ability of information to change understanding within a time interval' (Daft & Lengel, 1986, p. 560). Communication media such as email, face-to-face conversation or telephone vary in their capacity to process information. Face-to-face communication is the richest medium because it provides multiple cues as body language and tone of voice, and the message content is expressed by natural language (Daft & Lengel, 1986).

Especially, for entrepreneurs effective communication is inevitable. Because the quality of communication has impact on the effectiveness of the entrepreneurial team (ET), and relationships of the ET to its employees and to other business partners (Brinckmann, 2007) it is not surprising that it has impact on the general success of the company. The interaction with customers, clients, suppliers, competitors, service providers and other stakeholders is essential and demands the ability to communicate and persuade effectively to comprehend mutual needs and expectations (Onstenk, 2003). In the context of assessment of entrepreneurial communication competence this work will focus on face-to-face communication competence. This is because oral communication skills, listening and communication techniques, and supporting a constructive climate in face-to-face communication have been found to be closely related to success of the venture (Gehm, 2006; Morreale, et al., 2000). Therefore, the emphasis of the following definition lies on oral, effective, interpersonal communication to stakeholders by using different communication techniques. Communication competence in the context of face-to-face communication in entrepreneurship can thus be defined as

*'Conducting conversations, using communication behavior, which is both effective and appropriate, in face-to-face contact with stakeholders'*

To assess face-to-face communication competency the competence statement has to be broken down into performance criteria (cf. Burke, 1989). Therefore, it first has to be divided into its units.

As communication competence is a social competence it is predominated by skills and attitudes (Delamare Le Deist & Winterton, 2005) which will play an important part deriving performance criteria.

The competence statement which was identified above emphasizes two key aspects: the effectiveness of the communication and the appropriateness of the communication. Both aspects should be the main criteria to assess the quality of communication competence (Spitzberg, 2003). First aspect of the competence is 'using communication behavior which is effective in face-to-face contact with stakeholders'. Communication has to be goal oriented, otherwise it is not clear whether the communication was effective or not (Spitzberg & Cupach, 1989). However, the goal in this case is not to get one's will but is more relational focused: whether the communicative exchange of information is effective or ineffective. Communicative effectiveness in this case refers to the mutual understanding of the communication partners: messages which are sent have to be formulated clearly but also have to be comprehended correctly. Effectiveness of communication therefore requires to adapt communication behavior to another in conversations (Frymier, 2005).This does not only imply verbal communication, but also non-verbal communication (Daft & Lengel, 1986). Non-verbal communication refers to any actions or parts of interpersonal communication other than speech (Knapp & Hall, 1997). This includes gestures, volume and tone of voice, facial expressions, eye contact, posture, interpersonal distance, etc (Hargie, Dickson & Tourish, 2004). Congruence of verbal and non-verbal communication is important, as otherwise the message may be ambiguous (Hill, Siegelman, Gronsky, Sturniolo & Fretz, 1981).

The competencies which may be derived from this are

    C1: The entrepreneur articulates messages clearly and adapts his communication behavior to the communication partner

    C2: The entrepreneur uses non-verbal communication which is appropriate and congruent to verbal communication

From these competencies the elements and the performance criteria are derived. With a 'K' marked elements and performance indicators refer to knowledge-aspects, with 'S' marked elements indicate skills and with 'A' marked elements refer to attitude. In the mentioned competencies we find the following elements:

Elements which derive from competency C1 are:

    EC1 articulating messages - S

EC1 adapting to the communication partner - S/A

The next step is to set up performance indicators or criteria.

Performance criteria for C1 are:

PC1.1: speaking clearly, using adequate speed, tone and volume of talking - S

PC1.2: the participant uses adequate language which is understood by the other party (adequate technical terms, foreign language…) - S

Non-verbal behavior also plays a significant role in C3, which is introduced later. However, C3 does encompass more aspects than non-verbal behavior. Therefore, does the performance indicator PC2.4 also account to C3.

The Element which derives from competency C2 is:

EC2 using non-verbal communication - S

Performance indicators for C2 are:

PC2.3: Nonverbal behavior is congruent to verbal behavior - S

PC2.4/3.4: Nonverbal behavior (eye-contact, nodding, posture is attentive) - S/A

The second aspect of communication competence is 'using communication behavior which is appropriate in face-to-face contact with stakeholders'. First of all this statement indicates that the context is face-to-face communication - which is usually orally. It also concerns the other party involved in the conversation. Stakeholders may be employees, customers, business partner, financers etc. It is important to identify and deal with needs and concerns of each stakeholder. This demands the ability to facilitate mutual understanding, respect and trust (Habermas, 1999; Hargie, et al., 2004). This can be done by using active listening. Active listening shows interest and respect for the conversational partner by indicating that they are being fully attended and listened to (Hargie, 2006). Active listening is not only about hearing and understanding but more about comprehending the message which is being delivered and communicating back that this message was understood. Comprehending in this case means 'picking up the meaning and significance for the other party of what has been communicated' (Hargie, et al., 2004, p. p.331). Comprehension of the position of the other party is essential in order to respond to concerns and needs of the other party. Mutual comprehension can be fostered by different communication techniques, e.g. active listening, questions and by creating a constructive climate

The competencies which derive from the statement are:

C3: The entrepreneur uses active listening in the context of business communication and identifies and comprehends the needs of the other party

25

C4: The entrepreneur supports collaboration and facilitates a constructive climate of mutual understanding, respect and trust during the conversation

Elements which derive from competency C3 are:

EC3 Using active listening -S/A

EC3 Identifying the needs of the other party -S

EC3 Comprehending the needs of the other party -S

In the following the performance indicator for C3 are formulated. Following Hargie, et al (2004) active listening can be demonstrated verbally and non-verbally. These performance indicators are used to assess active listening (Hargie, et al., 2004):

PC3.1: Encouragers ('yes', 'right', 'hmhm', etc.) are adequate -S

PC3.2: The participant refers to previous statements of the other party -S

PC3.3: The entrepreneur summarizes main points of the conversation -S

PC2.4/3.4: Nonverbal behavior (eye-contact, nodding, posture is attentive) -S/A

Other important elements of this competency are questions. Questions may indicate interest in the other party and facilitate trust (Hargie, et al., 2004). Open ended questions as 'what do you think about this offer?' maximize answer possibilities and are therefore adequate to gain broader information about a certain topic. Closed-ended questions as 'do you think the offer is appropriate?' are more accurate and restrict possible answers to only some words, mostly 'yes' or 'no' (Hargie, et al., 2004). Questioning further refers to questions which connect up with a topic which is addressed during the conversation to gain more information about it instead of switching to another topic. Gathering information about the other party and their needs and concerns is central in negotiations and enables to identify potential areas of agreement or conflict (Hargie, et al., 2004). Performance indicators for this topic are:

PC3.5: The assessee uses open questions to get broad insight into certain topics -S

PC3.6: The assessee uses further questions to concretize certain topics -S

C4 (constructive climate) is inevitable for successful business conversations. It is characterized by understanding, respect, and trust. It facilitates the willingness to share information, and promotes collaboration (Burchell & Wilkinson, 1997; Hargie, 2006). It can be constructed in different ways. Essentials of this aspect are small-talk, a non-confrontational attitude, emphasizing mutual interests, and showing respect. Elements which derive from competency C4 are:

EC4: Supporting collaboration -S/A

EC4: Facilitating understanding, respect and trust -S/A

Performance indicators for these elements are:

The participant sustains a constructive climate by

PC4.1: …including small-talk at the begin of the conversation -S

PC4.2: …being non-confrontational when facing differences of opinion -A

PC4.3: …using 'we' instead of 'you' or 'I' when emphasizing mutual interests/concerns -S/A

PC4.4: …respecting the other parties concerns -A

To show the differences between the new defined competencies and the initial competencies from the VCP both approaches are contrasted in appendix 8.2. The VCP definitions mainly consist of performance indicators without a broader statement or allocation in competency elements. Also, the focus of this paper lies on face-to-face conversation. Therefore, not all elements of the VCP Communication Competency can be found in the new definition. The aspects which can be found are marked with the corresponding competency from this paper. Furthermore, the definition VCP definition was extended with non-verbal behavior aspects (C2).

Vertical Modularization

Since the aim of the assessment is to assess training needs it makes sense to distinguish different competency levels. The first three mastery levels mentioned by Dreyfus & Dreyfus (1986) include high potential for coaching and training, whereas the last two levels only give limited access for competency training. This is because application, implementation and reflection about the development plays a more significant role within the last two levels (Dreyfus & Dreyfus, 1986; Whitmore, 2002). Therefore, a distinction between *proficient practitioners and experts* does not make sense in the context of this training needs assessment. Both levels will be labeled 'proficient competent' in the context of this assessment. The differentiation between the other levels however is adequate since every level has different training focuses (Dreyfus & Dreyfus, 1986).

The learning goals/competencies which were identified in this step are reflected by the four mentioned competencies which can be performed on four different mastery levels.

### 4.1.2 Step two: Assessing the Current Competency Level of Entrepreneurial Competency

Step two of the design process involves the determination of the current competency level of the assessees. This stage is important since further learning would not be necessary when the actual mastery level already covers the desired competency standard of the competency profile. The current mastery level is therefore identified by using a scale which assesses the performance of the assessee during the role-play.

*Assessing Communication Competence*

Assessment methods differ in their focus and authenticity (appendix 8.1). Communication competence is a social competence and therefore includes mostly functional (skills) as well as social (attitudes) aspects (Delamare Le Deist & Winterton, 2005). Especially, for competences which are dominated by functional aspects it is important that the assessment represents the application context as close to the actual situation as possible (Fletcher, 2000). Therefore, observation is the most suitable assessment category (appendix 8.1). As role-plays are especially useful to assess communication competency and are more authentic and less cost intensive than simulations (Smit, 1995) it was chosen to assess communication competency through a role-play. Furthermore, role-plays may be recorded on video which has the advantage that the recorded situation may be viewed multiple times, reflected and analyzed for training purposes by the assessee, and rated by multiple assessors (Baarda & Goede, 2006). Video recording has been approved to be a helpful tool in assessing end developing communication competency (cf. Liberman, 1982; Olson-Buchanan, et al., 1998; Roter, et al., 2004). Role-plays are conducted for different purposes. They can help to close the gap between what somebody knows and how to apply it and may also serve as training method for face-to-face interactions (Wohlking & Gill, 1980). With regard to the competency learning circle role-plays are therefore especially suitable to support competency development since they may reveal possible competency deficits.

In general two forms of role plays are differentiated: method-centered role playing and developmental role playing. Method-centered role-plays concentrates on developing 'skills in specific procedures, methods, and techniques' (Wohlking & Gill, 1980, p. 6) whereas developmental role plays focus on complex situations where no clear procedures are available (Wohlking & Gill, 1980). In a developmental role play the participant is confronted with a more or less unknown problem and has to spontaneously deal with it. This is especially the case in training of communication skill, negotiation, counseling and problem solving. An effective role-play has to fulfill six different elements (Wohlking & Gill, 1980):

Relevance: the role-play has to be based situations of the work environment

Clarity: the description of the roles and the task should be comprehensible within 3-5 minutes.

Identifiability: The role should be written in the second person and should create identity in the first sentence 'Your are Mr/Ms XY and have YZ position'

Role maneuverability: the roles should allow spontaneous reactions. Therefore, the role should be written with focus on the problem or situation instead of feelings and emotions. The used language should be objective and non-judgmental and should not indicate possible solutions.

Focus: the roles should focus on the main objective of the role-play and should not include irrelevant details

Conflict: The role play should include a realistic conflict. The conflict could concern motives and emotions (e.g. anti-authority worker who hates to take order from his boss but depends on his job), conflicting roles (hard working employee has also to be a father/mother), perceptual differences (employer sees employee as too lazy and slow, customer sees employee as a good and friendly advisor who takes his time for the customer), divergent goals (employee wants to schedule his vacation at the peak time of a important project), competition (two employees want to get into the same position), scarce resources (two employees need the only left car for different purposes), or multiple of the mentioned conflicts (most conflict situations include more than one conflict) (Wohlking & Gill, 1980).

To design a role-play it is necessary to describe the different roles which are involved. The description of the roles can be found in appendix 8.3 (Assessor), 8.4 (Assessee), 8.5 (Investor).

*Rating Scale*

To assess the performance in the role play a rating scale is constructed which enables judgment about quality and quantity of performance aspects of the assessee (Smit, 1995). The quantity aspect of the rating scale refers to the observed amount of shown performance indicators whereas the quality aspect refers to its value for the conversation process. Performance criteria which were derived earlier are the basis of the scale. Communication competence can be separated into its four-sub-competencies (see 2.3.3). Each sub-competency is measures by different item-clusters. C1 is measured by the cluster 'interventions' (items 1-5), C2 by the cluster 'language' (items 6-7), C3 by 'climate' (items 8-11) and C4 by 'nonverbal-behavior' (items 12-13). The scores of each cluster are added to one total score which indicates the level of competency mastery for the specific sub-competency.

Earlier research shows that a five-point scale of judging is most appropriate for this purpose (Smit, 1995). The scales use a 5 point Likert-scale which ranged from '--' to '++' and leaves room for addition comments of the assessor (Fig. 5).

| The candidate **summarizes** the main points of the conversation | | | | | |
|---|---|---|---|---|---|
| Quality | -- | - | O | + | ++ |
| Quantity | -- | - | O | + | ++ |
| Comment | | | | | |

**Fig. 5. Example of Item & Scale**

The symbols are then transformed into scores ranging from 0 (--) to 4 (++) (Table 3). To enhance validity and reliability of the assessor's scoring the signification of each symbol was explained in terms of standards. The so called *rubrics* enable a more consistent scoring since assessors can use it as indicator for performance rating (Palumbo & Banta, 1999). '--' is defined as 'the quality of the criterion is very poor and influences the conversation negatively'. Whereas '++' is defined as 'the quality of the criterion is sophisticated or better'.

**Table 3:** Rubric/Translation of Symbols to Scores

| Symbol | Scoring for evaluation | |
|---|---|---|
| -- | 0 | Qualitative: The quality of the criterion is very poor and influences the conversation negatively<br>Quantity: The intervention is not seen at all |
| - | 1 | Qualitative: The quality of the criterion is poor and leads to minor consequences for the conversation<br>Quantity: The intervention is shown too little |
| O | 2 | Qualitative: The quality of the criterion is nearly sufficient and needs improvement<br>Quantity: The quantity of the intervention is nearly sufficient but could be higher |
| + | 3 | Qualitative: The quality of the criterion is good<br>Quantity: The intervention is shown adequately often |
| ++ | 4 | Qualitative: The quality of the criterion is sophisticated or better<br>Quantity: The quantity of the intervention is appropriate and does not need to be enhanced |

The maximum score which can be reached on the communication scale is 96. Depending on their scores participants may be allocated to the different mastery levels (Table 4). If candidates reach 60% of the scale (58 points) they may be regarded as competent performers. In this case only training which focuses on specific performance deficits is recommended.

**Table 4:** Allocation of Mastery Levels and Scores

| Scores | Mastery Level | Advice |
|---|---|---|
| 0-24 | Novice | broad training recommended |
| 25-57 | Advanced Beginner | broad training recommended |
| 58-77 | Competent Performer | specific training recommended |
| 78-96 | Proficient Competent | further training not required |

*Implementation*

The role-play took place in a prepared room at VentureLab Twente. Two tables were arranged in the focus angle of a camera. The camera was situated on a tripod on a third table which was used by the assessor. In this case it was possible to rate the candidate's performance live and later on also by means of video recording. One video was taken from a female participant introducing her business idea to a

financial expert, a PhD. candidate at NIKOS who volunteered as the role-player of the assessment. The description of the task of the role-player task can be found in appendix 8.5. Instruction material and information about the assessment date were sent at one week in advanced to answer possible questions and to enable preparation. The participant was confronted with the following description of the situation:

> *'You will play the role of a starting entrepreneur with your own business idea. You have invited a potential financier who might be interested in your business. Since, you are searching for reliable investors you want to take the chance to introduce you and your idea. You have made an appointment with the financier to give an introductive presentation\* which is followed by a conversation to explore possible co-operation'*

To enable judgments about non-verbal behavior the camera recorded both, the assessee and the role-player. The duration of the conversation was max. 20 min. After 15 min the assessee was reminded that she had still 5 min left.

### 4.1.3    Step Three: Identifying the Gap

Determining the gap between 'what is' and 'what should be' is important to demonstrate the actual learning need. The identification of the gap goes along with the implementation of the assessment. The gap can be presented in different forms: as percentage of the desired condition, on a scale or on performance levels (e.g. beginner to expert).

It is beneficial to demonstrate the gap in form of a visual representation. The representation of the competency gap with a *spider chart* has the advantage that it enables a multidimensional presentation of the individual mastery level of different sub-competencies (Gareis & Hueman, 2000). Therefore, a Microsoft Excel® sheet was created which automatically represents the scores of the assessee in a spider-chart (Fig. 6.). Since, solely communication competency is measured in this assessment sub-competencies are replaced by the clusters of items from the rating scale.

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\*since the introductive presentation is not part of this paper the focus lies on the conversation part of the assessment
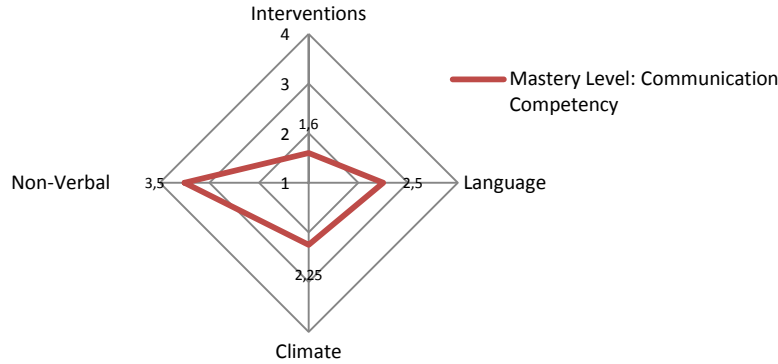
**Fig. 6** Spider Chart Communication Competency

The numbers from 1-4 on the axis represent the mastery levels of the competency profile. Level 1 would be equal to the *novice* level and level 4 represents the *proficient competent* level. The numbers which are connected to the red line indicate the current mastery level of the assessee. The gap becomes apparent when the desired mastery level of each cluster is compared to the current mastery level. The mastery level of 'interventions' for example lies on 1.6 which is the level of advanced beginners. The gap in this case extends over two mastery levels (competent performer, proficient competent).

### 4.1.4    Step Four: Establishing Priorities

Priorities can be set by analyzing the size of the gap, the importance or consequence and the probability of reducing the gap (Smith & Ragan, 2005). The probability of reducing the gap has to be checked together with the assessee: is the assessee motivated to reduce the gap? Does he/she have all required support? Etc. This can be done in the debriefing of the assessment (appendix 8.6). The criteria of importance or consequence of a gap may be more relevant when different competencies are assessed. Here, other aspects may play a role. For example, which competencies are most relevant for the development of the startup at the moment? However, in this assessment only communication competency was assessed and therefore the priorities may be set in terms of the size of the gap - which can be seen derived from the spider chart (Fig. 6). In our example, the participant of this spider chart does need further training in non-verbal skills, since the mastery level is 3.5 and thus sufficient enough. The priorities of further training within communication should therefore focus on interventions (1.6 = *advanced beginner*), language aspects (2.5 = *competent performer*) and climate aspects (2.25 = *advanced beginner*).

### 4.1.5   Step Five: Interventions to Close the Gap

The original discrepancy model was developed to find out whether instructions should be (re-) designed (Smith & Ragan, 2005). The purpose of the fifth step was originally to investigate if instructional design is actually appropriate to reduce the detected gap. In this context it could make sense to analyze whether the assessed gap exists because of other reasons than inadequate instructional design, for example because of low motivation, social loafing or absenteeism (Smith & Ragan, 2005). Since, the original discrepancy model was adjusted to the context of assessing the discrepancy between individual mastery level and desired mastery level of competency the original purpose of the fifth step changed in terms of its importance. In this context an analysis of alternative reasons for the gap may be less important, since the learning process is basically self-directed a therefore controlled by the assessee. However, an analysis could take place to evaluate if any general or personal obstacles could impede the learning process of the assessee. Since, every entrepreneurial team has a personal coach an alternative explanation for the gap and an adequate intervention can be identified during the coaching process. Therefore, planning of further training should include a coaching session aimed to identify possible alternative explanations for the learning gap.

## 5   Evaluation

### 5.1  Subjects

Since the pretest of the assessment was not compulsory the participant was asked to volunteer. All participants of the training program were contacted via email and the first respondent was chosen to participate in the assessment. The assessee was a female participant from the VentureLab Twente training program which had no earlier experience with communication training. She was contacted via email and received instructions previously to the assessment.

In total seven experts and trainers of communication skills rated the case. The rating scale which was used can be found in appendix 8.7. It bases on the performance indicators which are developed in 4.2.1. Six assessors rated the case by means of a video analysis; one of them (the author of this thesis) rated it live during the assessment. All seven experts are lecturers of communication techniques at the Saxion university of Applied Sciences and work for the Academy *Human and Society* (AMM =Academie Mens en Maatschappij). The youngest assessor's age is 27 whereas the oldest assessor has the age of 61. All differ in their occupational experience, ranking from 2 years to 27 years. Four of them have academic degree in psychology, two have a degree in social work and one originally comes from pedagogy.

The role-player was a PHD candidate from the Netherlands Institute of Knowledge Intensive Entrepreneurship (NIKOS) who has expertise on business financing. This is important since the role-play includes a conversation with a potential, financial investor (appendix 8.5).

## 5.2 Methods

To ensure interrater-reliability and to check if the rating scale is appropriate to assess communication competency six experts were asked to assess the video. Depending on their consensus the criteria list will be approved or adjusted.

The differences between the individual assessors can be found in Table 5. Three assessors classified the candidate as advanced beginner, three assessors as competent performer. The performance of the candidate was scored between both mastery levels. The mean rating score of all assessors is 57.5, with a standard deviation of 7.61. To check how significant the scores of assessors vary with regard to the mean score the coefficient of variation (CV) was calculated. It gives indication of how homogeneous the scores of the assessors are compared to the mean score (Sidhu, 2006). The CV was found to be 13.23%, which indicates a quite moderate variation between the assessors (Sidhu, 2006).

To check if other, demographic variables as education, age or the occupational experience of the assessor could have influence on the scoring (Spector, 2006) a non-parametric correlation analysis with Spearman's Rho is conducted. It reveals no significant relation of education and occupational experience with the mean score. Age, however correlates highly negative with the mean score ($\rho$=-.841 p<0.05). On item level it becomes apparent that age correlates negatively with certain scorings: quantity of encouragers ($\rho$=-.956 p<0.05), quality of open questions ($\rho$=-.878 p<.001), quality of non-confrontational behavior ($\rho$=-.878 p<.001) and non-verbal behavior ($\rho$=-.926 p<0.01).

**Table 5**: Mastery Levels & Scores of each Assessors

| Assessor | Total Score | Intervention Score | Language Score | Climate Score | Non-Verbal B. Score | Mastery Level |
|---|---|---|---|---|---|---|
| 1 | <u>47</u> | 23 | <u>6</u> | 12 | <u>6</u> | Advanced Beginner |
| 2 | 54 | 24 | 7 | <u>11</u> | 12 | Advanced Beginner |
| 3 | 54 | <u>18</u> | 7 | 15 | **14** | Advanced Beginner |
| 4 | 59 | **26** | 6 | 15 | 12 | Competent Performer |
| 5 | 62 | **26** | 8 | 14 | **14** | Competent Performer |
| 6 | 69 | **26** | 10 | **19** | **14** | Competent Performer |
| 7* | 57 | 25 | **8** | **14** | **10** | Advanced Beginner |

Bold numbers = highest rating, underlined numbers = lowest rating
*Live rating during the recording session by the developer

The reliability analysis concentrates on inter-rater agreement. The most spread procedure to calculate inter-rater reliability is by calculating the differences between one or more raters (Liao, Hunt & Chen, 2010). The reliability analysis concentrates on inter-rater reliability which is calculated by Cronbach's alpha. Cronbach's Alpha is usually used to assess the internal consistency of scales and gives

indication in how far the scale's items measure a latent construct (Kutner, Nachtsheim, Neter & Li, 2005) - in this case communication competency. However, when different raters all rate the same case the variation of the scores results from the judgment of the raters since the case remains the same. Under these circumstances Cronbach's alpha also gives information about relationship among the scores of the assessors - the inter-rater reliability (Liao, et al., 2010).

Cronbach's alpha for the 24 item-scale was calculates with PASW Statistics 18® and shows a score of 0.80 for the relationship between the scores of the assessors. Especially, one item 11 (scoring if the assessee uses 'we' when referring to mutual interests) affects the reliability of the scale negatively. When this item would be deleted or reviewed the reliability could rise to 0.84.

To analyze the reliability of the different sub-scales a more detailed analysis was done. The item clusters of each sub-competency were again analyzed with Cronbach's Alpha. The results can be found in Table 6. The subscale for climate had a negative α value (-.17). Further, analysis of the scale reveals that if item 11 would be excluded from the list the reliability would rise to α=.42

**Table 6:** Cronbach's Alpha of Subscales

| Subscale | α | Number of Items |
|---|---|---|
| Interventions | .66 | 10 |
| Language | .76 | 4 |
| Climate | .-17 (.42*) | 6 |
| Non-v. Behavior | .90 | 4 |

*if item 11 deleted

**Statistical analysis of the quality/quantity aspects**

Most of the items are separated by quality and quantity aspects. To verify their reliability an analysis of quality and quantity aspects apart from each other was done. The quality scale showed an α of .69. The quantity scale in turn only showed an α of .22 (Table 7). Furthermore, a non-parametric correlation analysis with Spearman's Rho of the quality and quantity subscales was done. This analysis does not reveal any significant correlation ($\rho=.004$, $p>.05$).

**Table 7:** Cronbach's Alpha for Quantity/Quality Aspects

| α of quantity scale | α of quality scale |
|---|---|
| .22 | .69 |
| .40 if item 11 deleted | |
| .41 if item 5 deleted | |
| .44 if item 10 deleted | |

## 5.3 Results

In the following an evaluation with regard to the results and the feedback of the different assessors will be conducted and adjustments in the procedure of the assessment will be introduced.

**Inter-Rater Reliability**

The analysis of Cronbach's Alpha and the CV shows that the assessors score quite homogeneous, demonstrating a consistent judgment of performance among different assessors. Cronbach's Alpha is very high ($\alpha$=.80) indicating that the inter-rater reliability is satisfying. These results also indicate that the actual competency level of the assessee indeed lies within the range which was indicated by the different assessors and therefore at the edge of both mastery levels, advanced beginner and competent performer (Table 5).

**Effect of Age**

The correlation analysis pointed out that age of assessors correlates highly negative with the mean score ($\rho$=-.841 p<0.05) and four other items (quantity of encouragers ($\rho$=-.956 p<0.05), quality of open questions ($\rho$=-.878 p<.001), quality of non-confrontational behavior ($\rho$=-.878 p<.001) and non-verbal behavior ($\rho$=-.926 p<0.01)). This could indicate that older assessors in this examination tent to rate these items stricter than younger assessors. But again, it has to be pointed to the small sample which may have impact: the mean age of the assessors is 47.83 with a quite high SD of 15.55. This indicates that there exist comparably large gaps within the deviation of age.

**Video-rating vs. Live-rating**

To check whether there were fundamental differences between rating of video- and live-performance the scores of the recording and the live rating during the recording were compared. The scores of the live rating were compiled by the author of this paper and were not included in the reliability analysis of the assessment. There were no significant anomalies from live rating scores and video rating scores found. The live rating score indicates the performance level of the assessee at the *advanced beginner* with 57 points. This is one point beneath the *competent performer* level and reflects perfectly well the results which were drawn by the analysis of the assessors' ratings: the performance of the assessee lies at the edge of both levels. Also the live-scorings of the sub-scales do not considerably differ from the video-scoring (Table 8).

**Table 8**: Comparison Live-Rating vs. Video-Rating

| Subscale | Mean Video | Live Rating | Difference (in %) |
|---|---|---|---|
| Interventions | 24 | 25 | 1 (4%) |
| Language | 7.33 | 8 | .66 (8.4%) |
| Climate | 14.33 | 14 | -.33 (2.5%) |
| Non-v. Behavior | 12 | 10 | -2 (16.66%) |

**Rating effects**

There may be different factors which influence the discrepancy between the assessors. Known issues which influence rating of performance are rater bias and errors. The Halo effect for example occurs when a general attitude from the assessor about the assessee interferes with the objective scoring.

Furthermore, distributional error may also influence the scoring: in general, some assessor tent to rate in only one dimension of the scale (Spector, 2006). These effects especially may have influence on a small sample. However, the findings do not give indication for severe distributional errors since the CV among the assessors is quite moderate (13.23%) and the chance that all assessors show the same distributional error is unlikely.

## 5.4  Discussion

Since, Cronbach's alpha is 0.8 the internal reliability of the scale is good. However, the small sample which is used could lower the significance of Cronbach's alpha. Cronbach's alpha was calculated on basis of six assessors which all rated the same case. The generalization to other cases therefore has to be validated further in practice. To identify items which vary in their scoring the standard deviation of each item was calculated. As the total SD was found to be quite moderate, the SD of the individual items was not expected to show any surprising findings. The highest SD was found in the quality aspect of Item 8 (small talk) with SD = 1.37, item 11 (using we) with SD = 1.26 and the quality aspect of item 12 (non verbal behavior) with SD = 1.10. These findings indicate that the variation among assessors at these items was higher than at other items. Obviously, assessors differed when judging these items; a possible solution to drop the SD of these items would be a more detailed, initial explanation how they are supposed to be rated. This could result in a more homogenous rating. Item 12 encompasses different non-verbal aspects (eye-contact, nodding, and posture). In this context it could be adequate to separate it into more items, each assessing one aspect.

Furthermore, another issue could have influenced the reliability of the scale: 3 of 6 raters had issues to rate items when they were not shown at all. This especially applies to the earlier mentioned item 11 and item 10 (referring to previous statements). The reliability analysis of the whole scale and the climate sub-scale revealed the negative influence of item 11 (Table 6). To enhance the item's reliability it may be suitable to give instruction how to rate items when they are not shown at all.

**Quantity-Ratings vs. Quality-Ratings**

Also the differentiation between quality and quantity aspects of the items was perceived as confusing and irrelevant. The assessors commonly agreed that a differentiation is not adequate because there was no perceived difference between quality and quantity aspects of most items. To check if the critics are also statistically significant the results of the correlation analysis are evaluated. They indicate no significant correlation between quality and quantity aspects ($\rho=.004$, $p>.05$). This finding does not support the critics of the assessor - since no significant relation between quality and quantity aspects could be found, indicating that both constructs differ from each other. It seems abnormal that no

correlation between quality and quantity exists since, for example, superior performers should score high on both aspects, whereas low performance should score low on both aspects. This raises the question if the differentiation of quality and quantity is reliable. To investigate this issue a new reliability analysis with Cronbach's Alpha was conducted - this time analyzing quality and quantity aspects apart from each other. The quality scale showed an α of .69. The low α (.22) of quantity scale is caused by three different items. Especially the conspicuous item 11 lowered the inter-reliability (Table 7). Also two other items were found to influence the reliability negatively (the quantity aspect of item 5 (referring to previous statements) and item 10 (respecting the other parties concerns)). This could indicate that the quantity scale suffers from the mentioned problems about the ambiguity how to rate items when they are not shown at all. Another explanation may be that the scores only base on the performance of one assessee which makes them very vulnerable for individual characteristics of the assessee. To elucidate this aspect further investigation with a larger sample of assessees would be required.

A possible answer to the critics of the assessors regarding the differentiation between quality and quantity could be a scale which comprehends both aspects in one *performance score*. As consequence a further analysis of quality and quantity correlation would be unnecessary.

The comparison of video-rating and live-rating does not indicate any significant differences. If applicable, the assessment may be conducted without the video analysis. This could have operational advantages (less time consuming, less organizational matters, more flexible procedure) but the missing video may not be used for training purposes (feedback, reflection, etc).

## 6  Conclusion

To construct a competence-based learning needs assessment for communication competency this paper evaluated the background of entrepreneurship with regard to competency acquisition. To connect entrepreneurship with CBET a comparison of latest literature from Brinckmann (2007) and Delamare le Deist & Winterton (2005) was done and possible methods of assessing competency were evaluated. By means of modularization of entrepreneurial communication competency based on Burke (1989) different performance indicators and mastery levels were implemented to enable the actual performance scoring. The design of the assessment included the 5-step discrepancy model and resulted in a live and video-based role-play assessment, including (at least) one assessor, one role-player and one assessee. The ratings of the assessor may be compared to the competency statement and may be represented by a spider chart to visualize the gap between the assessee's performance and the VCP. The reliability analysis shows a high inter-rater reliability of α= .80. A deeper analysis reveals some issues

assessors had when rating the quality/quantity aspects of the scale. This was adjusted in the revised version of the scale (Appendix 8.1).

**Main question**

In the following an answer to the main question is given. The comparison of the competency definitions of the VCP with the approach of Burke (1989) reveals a lot of potential for enhancement. As shown in 2.1.2 definition of competence should follow a guideline which leads to different sub-competencies and their performance indicators. To enable reliable assessments it is recommended that the VCP is evaluated with regard to this approach. The horizontal modularization of competence is very comprehensive. The re-designing of all competence statements of the VCP would consequentially lead to hundreds of different performance indicators. The main research question '*How is it possible to assess the individual entrepreneurial competency level of participants of the Entrepreneurship Training Program?*' is therefore not answered fully. It is possible to conduct an all-encompassing entrepreneurial competence based assessment-center but not without adequate horizontal modularization of all competences which have to be assessed. The implementation of such includes further designed assessments. Depending on the type of competence methods may be combined to assess several competences at the same time. An example would be a conversation about financial management procedures which are (planned) to be implemented in the business. Thereby, it would be possible to measure communication competencies and financial competencies with one method. Furthermore, it is also possible to prioritize competences according to their importance to the current development state of the entrepreneur. However, an adequate method for that has to be developed at first.

**Sub-questions**

To conclude how the sub-questions are answered by this paper each one is reflected in the following.

Question 1: *Which competency-based learning needs-assessment is most suitable to measure entrepreneurial communication competency?*

The answer to this question is given by an evaluation of different assessment methods. Communication competency is dominated by skill and attitude elements and therefore an assessment method which focuses on these aspects is most suitable. The comparison of different methods resulted in a role-play which may be rated by video or live assessment (see also appendix 8.1).

Question 2: *Which method is adequate to represent the assessee's level of competency and to compare the personal competency profile with the existing entrepreneurial competency profile to reveal individual learning needs/gaps?*

The first part of the question refers to the visualization of the competency level. The second part refers to the identification of the gap between the individual competency level and the VCP. These

demands are answered by visualizing the individual competency level by means of a spider chart. On the one hand it is possible to visualize the competency profile of the individual. On the other hand the distinction of different mastery levels enables a direct comparison to the VCP to reveal individual learning needs.

Question 3: *How can assessees be supported to become aware of entrepreneurial competency strength and deficits to acknowledge the importance further development?*

This question refers to support for the learning process which closes the learning gap and to facilitate the progress from being unconsciously incompetent of being consciously incompetent. The results of the assessment, the feedback, the spider chart as well as the video recording enable learners to reflect about their performance and to analyze their learning potential together with their coaches, getting consciously incompetent (Whitmore, 2002). Therefore, also the third goal of the needs-assessment is achieved.

**Limitations**

Despite of the positive conclusions there is still potential for adjustment. A new revised version of the scale could resign the differentiation in quality and quantity of the criterion. The feedback from the first test shows that the differentiation between quality and quantity was found to be unreliable and irritating in most cases and seems to be unnecessary. A consistent allocation of the criterion into one score which encompasses both quality and quantity could therefore provide more validity. Also clear instructions of how items should to be rated might enhance the reliability, especially when the items are not shown.

The item clusters *language* and *non-verbal behavior* only include two items. To enhance the reliability of these sub-scales more items could be added or existing items could be separated into more detailed items.

To increase validity and reliability of the assessment further quantitative tests could be conducted regarding the stability (test-retest) and the internal consistency of the assessment. The quantitative evaluation will be enabled by the implementation of the assessment during the training enabling more samples to be used in the validation process.

Another limitation of the whole competence approach is still the definition of competency and competence and the discrimination of them. Literature does not use a homogeneous definition of these constructs which impedes the theoretical conjunction and comparison of different approaches. Since, some authors do not distinguish between competency and competence it is nearly impossible to follow one line of argumentation. As mentioned earlier, different contexts use different definition. This work

combines the context of entrepreneurship with learning psychological approaches and therefore consolidates two approaches.

The inter-rater reliability analysis of the quality and quantity sub-scales reveals insufficient consistency. This deficit was treated in the new version of the scale (Appendix 8.9) by including an integrated 'performance score'. Also the issue with the clusters *language* and *non-verbal behavior* was adjusted in the revised version. Summing up it can be concluded that the entrepreneurial communication-competency assessment together with the revised version of the rating scale is a valid instrument for training purposes. It allows the assessment of competency mastery levels of participants and reveals their potential focus of further training.

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# 8 Appendix

## 8.1 Assessment Methods

**Oral/Written Examination**

Obviously this category includes two different types of assessments: oral examination and written examination. As both types differ in terms of application characteristics it makes sense to evaluate them individually.

Oral examinations are settings in which assessees are required to verbally respond to questions or tasks (Soulsby, 2009). It is valuable to collect evidence across a broader range of activities and is therefore suitable to gain supplementary information. Furthermore, it focuses on knowledge aspects as understanding and applicability of theoretical constructs. Also another weakness of oral examination is that the evidence of this assessment method alone would not be appropriate to infer to competency of the assessee. Another limitation refers to its realness, as an interview hardly represents the real application context of the competency (Fletcher, 2000). Oral examinations are time and personnel consuming as one interviewer can only concentrate on one participant. Also the situation of an oral examination may cause a stressful situation for participants. As the communication between interviewer and interviewee is an important part of the interview the results of interviews tend to be influenced by communication skills of the involved persons (Soulsby, 2009). A key issue for successful oral examination is therefore its standardization which includes well trained assessors and standardized and validated questions. Also the presence of multiple assessors (panel interview) may reduce the influence of subjective bias. Unstructured interviews are a good example for non-standardized test settings as the questions may vary from interview to interview. By contrast, during a structured interview the assessor uses previously determined questions which standardize its implementation and enhance its reliability (Spector, 2006).

Written Examinations (also known as paper-and-pencil-test) are standardized tests which focus on knowledge. The assessee is asked to give a written answer or opinion to a statement, questions, or task. Written examinations are especially valuable when knowledge forms a key component of the relevant competence, for example providing information (Fletcher, 2000). Its formats differ in the response options which may be used by the participant: open questions or essays leave more answer possibility then multiple choice or *true and false* methods.

Written exams may be differentiated into *selected-response assessments* and *constructed response assessments* (Brown & Hudson, 1998).

Selected-response assessments present assessees with different questions and require them to select the correct answer from several possible choices. They can either be conducted as paper-and-pencil test

or as computer version (Brown & Hudson, 1998). They are especially useful to measure knowledge aspects of competence (Fletcher, 2000). Selected response assessments are relatively time saving as they enable a lot of assessees to participate at the same time. Also the evaluation of test results can be administered rapidly. Once standardized and checked on reliability these methods enable objective scoring of key knowledge and attitude aspects. A mayor disadvantage of these assessments is that they are relatively difficult to construct and need to be constructed carefully by subject experts with knowledge of test design and test matter. When they focus only on knowledge they are only suitable to measure competences with knowledge as key aspect which makes them relatively theoretical (Fletcher, 2000). Selected-response assessments limit answer possibilities to a minimum and because the participant has to select an answer from different possible answers the guessing factor has also to be controlled (Brown & Hudson, 1998).

**Multiple choice assessments** require the participant to select the right answer among a set of different response possibilities (Fletcher, 2000).

**True/False assessments** present a sample statement which has to be judged if it is true or false. In this condition the guessing factor is especially high (50%) as there are only two possible answers (Brown & Hudson, 1998).

In **matching assessments** the assessee has to select a statement from a list that complements best with statements from another list. As the answer possibilities here may be quite high the guessing factor is comparatively low (Brown & Hudson, 1998)

In contrast to selected-response assessments constructed-response assessments require that learner actually have to produce or construct the answer (Smith & Ragan, 2005). Their advantage over selected-response assessments is that they do not include a guessing factor. In general this type of assessment is more cognitive demanding and requires higher reasoning of intellectual skills. Another strength is that they are more congruent with the real working field and do therefore reflect a more consistent view competence which makes this approach more valid as the ask the assessee to organize and compose the answers rather than only recognize or recall knowledge (Smith & Ragan, 2005). Because constructed response assessments are more flexible with regard to the right answer they include a greater chance of being subjective when deciding if the answer is correct. Furthermore, constructed-response assessment scores tent to be influenced by writing or communication skills of the assessee (Brown & Hudson, 1998).

**Fill-in-the-blank assessments**

Fill-in-the-blank assessments give a context (situation or a sentence) wherein some passages are left blank. The assessee's task is to complete the blank passages with his knowledge about the context. The advantage of a fill-in-blank assessment is that they are quite easy to construct and to administer (Brown & Hudson, 1998). However, they are also generally very narrow and may focus only on a certain situation or sentence. Also the number of possible answers is comparably high and reduces its validity.

**Short answers**

Short answers assessments ask the assessee to respond with a few phrases or sentences to a question or statement. They are also relatively easy to construct. Again, a disadvantage of them is that they are difficult to score because of the variety of possible answers. They further tend to emphasize factual knowledge instead of higher thinking skills or performance/attitude.

**Essays**

Essays require the assessee to respond to a question or direction by organizing and writing an answer. Assessees must construct their own coherent answers and have to justify it by leaning on knowledge and experiences. Compared to selected response assessments essays require more complex though which makes them a predestined tool for assessing complex competences (Miller, 2003). Answer possibilities are very complex in this type of assessment therefore it is especially difficult to score objectively. The scoring may also be influenced by language or writing skills by the assessee. Furthermore, it is quite labor and time intensive to evaluate (Miller, 2003).

**Observation**

Observational assessments may be used to assess performance of assessees in controlled testing situations or in work situations (Priestly, 1982). Observations provide high quality evidence of competence as they enable to show and assess all aspects of KSA (Fletcher, 2000). They can be divided into obtrusive observations and unobtrusive observations. In obtrusive observation settings does the assessee know that she/he is in an assessment-condition. Unobtrusive observations refer to observations in which the assessee is unaware of being examined. They mostly happen in the context of the work-field (Priestly, 1982). Both conditions have their (dis-)advantages. The major advantages are that they enable to measure certain skills directly and are good indicators for competency. By implementing criteria or observations scales it is possible to provide high standards of reliability in evaluating complex constructs and procedures (Priestly, 1982). However, performance observations share some disadvantage with for example oral examination: they are relatively time and personnel consuming as they are quite complex and have to be administrated individually (Priestly, 1982). Furthermore, they may include subjective bias of the assessor which have to be minimized by appropriate training and scales (Smith & Ragan, 2005).

**Simulation**

Simulations are techniques in which the assessee has to handle portrayed tasks or situations from the real work field (Smith & Ragan, 2005). This may happen when the observation of an assessees performance is impracticable or undesirable under real-working conditions (Spector, 2006). In this conditions it is possible to standardize the environment to test complex skills of the assessee (Fletcher, 2000). The weaknesses of this method are that a standardized, simulated working condition with clear assessment criteria may be very cost intensive. Furthermore, individuals tent to react differently in a test situation then under real situations which might interfere with the reliability (Coffey & Douglas, 2008; Fletcher, 2000; Spector, 2006).

**Role Plays**

Role plays differ from simulations as their participants have to adapt their behaviors to fit in with their roles (DeNeve & Heppner, 1997). Like simulations, role plays enable to simulate specific situations from the work field to practice and to assess relevant competences (Shepherd, 2004). In entrepreneurship they are especially useful to assess social and communication skills. This may happen in customer service and sales situations, negotiations or personnel interviews (Van Ments, 1999). The strength of role plays is that they provide the possibility to portray social problems and dynamics of group interaction and they tend to be very close to the real work situation. This enables a realistic view on the assessee's competencies. However, their mayor disadvantage is that role plays are costly and require comprehensive preparation in terms of standardization and scoring procedures (Norton, Grills-Taquechel & Mona, 2008; Spector, 2006).

**Product Assessment**

Product Assessment focus on the result of learning and provide evidence for the achievements of the assessee (Coffey & Douglas, 2008). From these results the assessor can derive earlier acquired competencies and can bring them in relation to learning goals/competency standards. A **work sample**, for example, requires a person to demonstrate how well he can perform relevant tasks (Spector, 2006). They may concentrate on the process or on the product itself. When concentrating on the process the aim is to assess how a person performs in a controlled situation with previously determined tools. As we concentrate in this section on product assessments the focus also lies on the product-based work samples. Product-based work samples are samples which were previously prepared by the assessee in order to prove his competency. Their advantage is that they are quite reliable due to their close connection to the work context. Another advantage is that they provide good insight in situations when skills and knowledge are difficult to observe during the actual application. However, the disadvantages are that the rating may be biased by subjective influences as this procedure is difficult to standardize.

Furthermore, one of its advantages is also a disadvantage: as a product assessment focuses on the product it does not allow judgments or enables control about its development process. This endangers the validity as its development stays intangible (Fletcher, 2000).

Another form of product assessment may be a portfolio assessment. A portfolio is a collection the assessee's work and competency acquisition and concentrates on his effort, progress or achievement in a certain context (Smith & Ragan, 2005). Again, it is possible to focus on the acquisition process or on the actual achievements of the assessee. Portfolios enable judgments and reflections on the learning process and may demonstrate important competencies in their application context. As there are many ways to prove competency acquisition the assessee may use various sources to show his achievement which makes the assessment quite comprehensive in administration and time consuming. The ability of using different sources as indicators for the achievement and development progress is a reason portfolios are such a valuable resource for evidence of the learning process of its owner. However, this is also why the judgment in portfolio assessments often includes subjective criteria from the assessor, resulting in a comparably low interrater reliability. Due to the large number of information it is nearly impossible to enhance the validity of the portfolio without affecting the reliability of it. For example, a stricter standardization of the judgment criteria would impair the information richness and thus also the educational value of the portfolio (Driessen, van der Vleuten, Schuwirth, van Tartwij & Vermunt, 2005). .

**Table 9:** Competency Based Assessment Methods

| Category | Oral examination | (written) Selected-response assessments | (written) constructed-response assessments | Observation | Product Assessment |
|---|---|---|---|---|---|
| **Method** | (un)structured (Panel)Interview | Multiple choice<br>True/False<br>Matching | Fill-in-the-blank(FIB)<br>Short answer (SA)<br>Essay (E) | Simulation (S)<br>Role Play (RP) | Work sample (WS)<br>Portfolio (P) |
| **Focus of evidence (ranked by relevance)** | Knowledge/Skills Attitude | Knowledge/Attitude | Knowledge/Attitude/Skill | Skill/Attitude/Knowledge | Skill/Knowledge/Attitude |
| **Most appropriate for :** | Cognitive Competences | Cognitive Competences<br>Social Competences | Cognitive Competences<br>Social Competences | Functional Competences<br>Social Competences | Functional Competences<br>Cognitive Competences |
| **Advantage** | - possible to collect information about a broad range of competences<br>- focus may lie on different aspects of KSA | -Time saving<br>- May be highly standardized (high validity/reliability)<br>- rapid administration<br>- comparable objective representation of knowledge and attitude aspects | - low guessing factor<br>- includes reasoning skills to solve complex tasks<br>- more authentic<br>- assessee is asked to organize and compose answers<br>- (FIB) easy to construct and to administer<br>- (E) may assess complex competences | - High quality of evidence for performance, especially skills<br>- most authentic<br>- may be highly standardized<br>-(RP) especially useful to assess social and communications skills/attitude | - May concentrate on outcome or process<br>- (WS) give insights to situations when competency is difficult to observe<br>- (WS) close connection to work context<br>- (P) different sources of evidence possible |
| **Disadvantage** | - Does not represent real working condition<br>- Does not provide enough complex information to infer to competency<br>- Time and personnel consuming<br>- May be stressful<br>- Results may be influences by communication skills | - difficult to construct with regard to content, validity and reliability<br>- evidence is theoretical, not authentic<br>- high guessing factor<br>- when assessing knowledge: focus on factual knowledge (recall or recognize) | - influenced by writing/communication skills<br>- scoring may be subjective as answer possibilities are complex and multiple<br>-time consuming<br>- (FIB) quite narrow in context<br>- (SA) often focus too much on factual knowledge instead of skills/attitude<br>- (E) especially difficult to score as answer possibilities are very complex | - time and personnel consuming<br>- complex administration<br>- subjective scoring<br>- (S) simulating real working condition may be cost intensive, individuals react different under testing situations than under real situations<br>- (RP) comprehensive preparation, hard to standardize/score | - focus on previous achievements instead of actual competence<br>- not always easy to consolidate with the competence standards<br>- subjective bias when creating (by the assessee) and evaluating (by the assessor) as they are difficult to standardize<br>- because of richness of information time consuming<br>- comprehensive administration<br>- may measure presentation skills |
| **Practical consideration** | - Assessors have to be well-trained<br>- interviews have to be highly standardized<br>- evidence for competency has to be well-founded<br>- multiple assessors enhance reliability | - Subject experts needed to construct test<br>- supplementary evidence only (not authentic)<br>- useful for large groups | - good structure needed<br>- good criteria needed | - Assessors have to be well-trained<br>- Scales and Criteria have to be highly standardized | - Appropriate standardization is needed<br>- Advice to assessees for the development may be necessary |

## 8.2 Comparison of the Competence Definitions

Table 6: Comparison of the New Definition and the VCP Definition of Communication Competence

| | New Definition | VCP Definition |
|---|---|---|
| Competence statement | *'conducting conversations, using communication behavior, which is both effective and appropriate, in face-to-face contact with stakeholders'* | |
| Competencies | C1: The entrepreneur articulates messages clearly and adapts his communication behavior to the communication partner<br><br>C2: The entrepreneur uses non-verbal communication which is appropriate and congruent to verbal communication<br><br>C3: The entrepreneur uses active listening in the context of business communication and identifies and comprehends the needs of the other party<br><br>C4: The entrepreneur supports collaboration and facilitates a constructive climate of mutual understanding, respect and trust during the conversation | |
| Elements | EC1 articulating messages<br>EC1 adapting to the communication partner<br><br>EC2 using non-verbal communication<br><br>EC3 Using active listening<br>EC3 Identifying the needs of the other party<br>EC3 Comprehending the needs of the other party<br><br>EC4 Supporting collaboration<br>EC4 Facilitating understanding, respect and trust | |
| Performance Indicators | PC1.1: speaking clearly, using adequate speed, tone and volume of talking<br>PC1.2: the participant uses adequate language which is understood by the other party (adequate technical terms, foreign language…)<br><br>PC2.3: Nonverbal behavior is congruent to verbal behavior<br>PC2.4/3.4: Nonverbal behavior (eye-contact, nodding, posture is attentive)<br><br>PC3.1: Encouragers ('yes', 'right', 'hmhm', etc.) are adequate<br>PC3.2: The participant refers to previous statements of the other party<br>PC3.3: The entrepreneur summarizes main points of the conversation<br>PC3.5/2.4: Nonverbal behavior (eye-contact, nodding, posture is attentive) | The entrepreneurial team:<br>- employs a good discussion technique (C3)<br>- has attention for the configuration, organization and structure of a presentation and utilizes appropriate presentation tools<br>- conveys information in a systematic, coherent and gripping manner<br>- taking into consideration discussion partners, listeners and readers (C3)<br>- in such a way that the message comes across to them and is understood (C1)<br>- is able to defend its opinion, needs and interests in a non-offensive, tactful manner (C4)<br>- is capable of building trust (C4)<br>- inspiring parties concerned and |

| | |
|---|---|
| | convincing them of its standpoints |
| PC4.1: …including small-talk at the begin of the conversation | |
| PC4.2: …being non-confrontational when facing differences of opinion | |
| PC4.3: …using 'we' instead of 'you' or 'I' when emphasizing mutual interests/concerns | |
| PC4.4:…respecting the other parties concerns | |

**8.3    Assessment: Instructions Assessor**

**Instructions for Assessing Entrepreneurial Communication Competency**

This assessment is designed to measure communicative competency in the context of entrepreneurship. Communicative competency in this case comprehends aspects of face-to-face communication, presentation skills and persuasion techniques. At least one expert of communication is required as assessor. When more assessors are used the mean score of the results may be used.

**Procedure**

1. Ask the assessee to prepare a presentation about his/her business (idea) **one/two week(s) earlier** and arrange an appointment with the role player.

2. Arrange a suitable location and all utilities- a quiet room with projector, camera and computer, if applicable.

3. Prepare the camera setting so that the assessee, the role-player and the presentation is recorded.

4. Shortly before the presentation, ask the assessee the first question from scale 1 (Understanding)

5. When the assessee is prepared the presentations may begin. If the assessee does not have any further questions, he/she can use the next 40 minutes to hold a 15-20 min presentation and to talk to the financier (20 min).
   Presentation:
   - While watching the presentation use the presentations scale
   - Check the time (max. 20 min)
   - When the end of the presentation is not insight after 15 min please inform the participant that he/she has only 5 min to go.

6. Discussion
   - When the discussion starts please switch to the communication scale to assess
   - Check the time (max. 20 min)
   - When the end of the discussion is not insight after 15 min please inform the participant that he/she has only 5 min to go.

After the 30 min please ask the role player the second question from scale 1 (Understanding)

To evaluate the performance of the assessee please fill in the scores of the different items into the corresponding excel sheets and print out the spider chart.

After that, debrief the participant about his/her performance and plan further development steps (see debriefing guideline)

## Communicative Competency Assessment - Instructions for Assessees

**Why Communicative Competence?**
Effective Communication is one of the most important factors influencing personal and business success. Communication within the entrepreneurial team, to customers, employees, financiers and other business partners
- Enhances productivity
- Fosters quality of service and products
- Results in suggestions for improvements
- Supports creativity
- Leads to effective networking
- Lowers costs

Therefore, communicative competency is especially essential to entrepreneurs

**What does this assessment measure?**
This assessment is designed to measure your individual communication competency. The results will give you an indication of your skills and will provide recommendations for possible training focuses.

The assessment consists of a presentation part and a discussion part. Therefore, please prepare a short (max. 15 min) presentation about your business idea and bring it to the meeting.

**The assignment**
The assignment has the form of a role play.
*You will play the role of a starting entrepreneur with your own business idea. You have invited a potential financier who might be interested in your business. Since, you are searching for reliable investors you want to take the chance to introduce you and your idea. You have made an appointment with the financier to give an introductive presentation which is followed by a conversation to explore possible co-operation.*

If you have further questions, please don't hesitate to write me an email: t.nicklaus@student.utwente.nl

Good luck!

## 8.5    Assessment: Instruction Role-Player

**Casus Investor:**

You represent a big investment company which focuses on high-potential start-ups. The last three investments you initiated failed and now you are under a lot of pressure by your boss to acquire a successful investment. You were approached by a startup founder who is searching for financiers and you agreed to an appointment with him. The founder wants to hold a presentation about his business and afterwards he wants to talk to you about a possible collaboration. However, because of your least experiences with failed startups you are very cautious and have critical questions about the business idea.

Information:

The duration of the presentation and the discussion will be each ca. 15 min. You may take notes during the presentation.

## 8.6    Assessment: Debriefing Guideline

The debriefing of the assessment should concentrate on two topics:
the identification of competency gaps and the planning of training
actions.

**Identifying the Gap:**
In this step the debriefing should concentrated on explaining the results and analyzing the consequence of the gap.

The gap is represented in the spider chart. Each line of the chart represents one of the following **mastery levels**:
Novice             Advanced Beginner                 Competent Performer                    Proficient Competent



Spider Chart Communication Competency
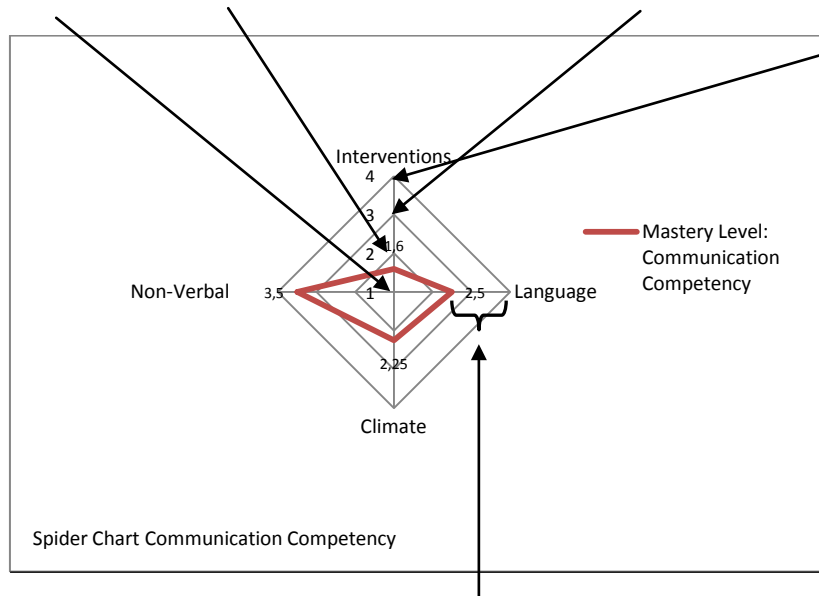
The gap is characterized by the **discrepancy** of the assessee's mastery level (red line) and the outer line of the chart (level 4). In this example the gap for language aspects is 1.5 mastery levels.

**Training actions**
Before certain action can be started it may be important to prioritize them

*Establishing Priorities:*
This can be done by using the spider chart to identify the size of the gap.
Furthermore, priorities can also be established during a coaching session which could address following questions:
What does the assessee think about the results?
How would the assessee prioritize the gaps?
Which support may be needed?
Which action could be taken to minimize the gap?
Which obstacles could impede the learning process? How may be dealt with them?
*Choosing training action*
To choose the right actions to minimize the gap it may be necessary do some research which steps might be adequate. Possible steps for may be
  - Consultation of a communication trainer
  - Practicing exercises and tasks
  - Literature study
  - Gathering feedback
  - Etc.

### 8.7    Assessment: Communication Competency Scale

| Name (Assessee) | |
|---|---|
| Name (Assessor) | |
| Date: | |
| | |

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| **Interventions** | | | | | |

1.  **Encouragers** ('yes', 'right', 'hmhm', etc.) are adequate

| | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

2.  **Summarizes** main points of the conversation

| | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

3.  Uses **open questions** to get broad insight into certain topics

| | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

4.  Uses **further questions** to concretize certain topics

| | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

5.  The participant refers to **previous statements** of the other party

| | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

| General Communication | | | | | |
|---|---|---|---|---|---|
| 6. The participant **speaks clearly**, using adequate **speed**, **tone** and **volume** | | | | | |
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 7. The participant uses **adequate language** which is understood by the other party (adequate technical terms, foreign language…) | | | | | |
| Quality | -- | - | o | + | ++ |
| Comment | | | | | |

| The participant sustains a constructive **climate** by | | | | | |
|---|---|---|---|---|---|
| 8. …including **small-talk** at the begin | | | | | |
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 9. …being **non-confrontational** when facing differences of opinion | | | | | |
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 10. …**respecting** the other parties concerns | | | | | |
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 11. …**using 'we'** instead of 'you' or 'I' when emphasizing mutual interests/concerns | | | | | |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

| Nonverbal behavior | | | | | |
|---|---|---|---|---|---|
| 12. Nonverbal behavior (**eye-contact, nodding**, **posture** is attentive) | | | | | |
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |
| 13. Nonverbal behavior is **congruent to verbal behavior** | | | | | |
| Quality | -- | - | o | + | ++ |
| Quantity | -- | - | o | + | ++ |
| Comment | | | | | |

| | | Judgment Description: |
|---|---|---|
| 0 | -- | Qualitative: The quality of the criterion is very poor and influences the conversation negatively<br>Quantity: The intervention is not seen at all |
| 1 | - | Qualitative: The quality of the criterion is poor and leads to minor consequences for the conversation<br>Quantity: The intervention is shown too little |
| 2 | o | Qualitative: The quality of the criterion is nearly sufficient and needs improvement<br>Quantity: The quantity of the intervention is nearly sufficient but could be higher |
| 3 | + | Qualitative: The quality of the criterion is good<br>Quantity: The intervention is shown adequately often |
| 4 | ++ | Qualitative: The quality of the criterion is sophisticated or better<br>Quantity: The quantity of the intervention is appropriate and does not need to be enhanced |

| Scores | Mastery Level | Advice |
|---|---|---|
| 0-24 | Novice | broad training recommended |
| 25-57 | Advanced Beginner | broad training recommended |
| 58-77 | Competent Performer | specific training recommended |
| 78-96 | Proficient Competent | further training not required |

### 8.8 VentureLab Entrepreneurial Competency Profile
## Part 1: General Entrepreneurial Competencies

1. Conceptual and analytical
2. Innovation
3. Enforcement
4. Flexibility
5. Self-knowledge and -Confidence
6. Learning ability
7. Communication

## Part 2: Social entrepreneurial Competencies

8. Teamwork
9. Leadership
10. Networking

## Part 3: Functional Entrepreneurial Competencies

### *Commercial Management Competencies*
11. Strategic marketing
12. Market analysis
13. Transactional marketing
14. Relational marketing
15. Sales

### *Technology Management Competencies*
16. Strategic Technology management
17. Technology analysis
18. Internal technology development
19. External technology acquisition
20. Technology protection
21. Technology Utilization

### *Financial Management Competencies*
22. Strategic Financial
23. Finance Sourcing
24. Liquidity management
25. Accounting

### *Strategic Management Competencies*
26. Opportunity development
27. Future orientation
28. Competitive positioning
29. Holistic thinking
30. Contextual awareness

### *Organizational Management Competencies*
31. Planning
32. Organizing
33. Controlling

## Part 1: General Entrepreneurial Competencies

**1     Conceptual and analytical Competence**

The entrepreneurial team:

1.1     gathers extensive information to base its decisions on (decision-making)

1.2     's central decisions are characterized by extensive considerations and analysis (decision-making)

1.3     always considers different alternatives when decisions are made (decision-making)

1.4     favors a systematic approach to one driven by intuition when making its decision (decision-making)

1.5     is able to make clear on what grounds decisions are made (decision-making)

1.6     anticipates the consequences of a certain choice beforehand and indicates them clearly (decision-making)

1.7     creates solutions analytically and in a structured manner

1.8     notices similarities with earlier issues and solutions

1.9     recognizes pattern and trends in information SKILL

1.10     integrates ideas, themes and observations into clear and useful insights, gathering new connections from complex information

1.11     regards problems and situations in a more encompassing framework which allows for broader and deeper insights `attitude`


**2     Innovation Competence**

The entrepreneurial team:

2.1     can easily find new (innovative) solutions for problems (creativity)

2.2     has strength in development of new products and procedures (creativity)

2.3     is characterized by the ability to develop unconventional solutions further (creativity)

2.4     breaches existing structures and lines of thought and derives relevant innovative ideas, solution methods or points of view from this (creativity)

2.5     utilizes current tools, patterns and relationships in a creative way (creativity)

2.6     applies existing matters and procedures from other fields in its own situation

2.7     attributes special importance to pursuing its own way

2.8     has an ability to pursue calculated risks, even when the consequences cannot be 100% foreseen or in matters of strongly conflicting interests

2.9     looks for challenges in new and other future-oriented solutions and procedures

2.10     stimulates and methodically directs innovation processes, initiative and participation and provides the necessary space and support.

**3      Enforcement Competence**

The entrepreneurial team:

3.1     takes action to create opportunities or to prevent problems from arising or repeating themselves, before it is asked to or the circumstances force it to take action (initiative)

3.2     is willing to make big personal sacrifices to achieve company goals (perseverance)

3.3     is pushing hard towards its goals in spite of severe set-backs, social pressure, disappointments and obstructions (perseverance)

3.4     recovers quickly after setbacks or disappointments (perseverance)

3.5     retains an overview of the situation in a crisis and keeps its emotions in check

3.6     never postpones important decisions (decisiveness)

3.7     breaches vague situations in which no one commits himself by being the first to take a standpoint (decisiveness)

3.8     is able to make a comparative business assessment based on limited information or incomplete data (decisiveness)


**4      Flexibility Competence**

The entrepreneurial team:

4.1     changes its style and approach to achieve a certain aim when changes to its environment or in its organisation (procedures, tasks, responsibilities, policies and other people's behaviour) occur or when it notices that a previously adopted style or approach will be less or not at all effective. When making these changes, it is prepared to reach a compromise and is open to other views

4.2     regards changes as an opportunity rather than a threat


**5      Self-knowledge and -Confidence Competence**

The entrepreneurial team:

5.1     displays a realistic understanding of its own identity, values, convictions, strong and weak points, qualities, competencies, interests, ambitions and behaviour

5.2     can pick and realise its own course, based on self-insight

5.3     takes action to further develop competencies when required, based on self-insight

5.4     has a personal development plan

5.5     conveys a calm, self-assured impression

5.6     trusts on its competencies in order to reach an established goal

**6        Learning ability Competence**

The entrepreneurial team:

6.1    regularly and systematically requests feedback and is able to transform learning points into more effective behaviour

6.2    works out why good ideas or programmes work and exploits these insights

6.3    can make a connection between its own capabilities and identified success and failure factors in order to perform better in future

6.4    accepts responsibility for mistakes it made (even unbidden)

6.5    has the ability to learn from interaction, collaboration and communication with others

6.6    likes exchanging new experiences

6.7    attends courses and/or trainings in order to better do its job


**7        Communication Competence**

The entrepreneurial team:

7.1    employs a good discussion technique

7.2    has attention for the configuration, organization and structure of a presentation and utilizes appropriate presentation tools

7.3    conveys information in a systematic, coherent and gripping manner, taking into consideration discussion partners, listeners and readers, in such a way that the message comes across to them and is understood

7.4    is able to defend its opinion, needs and interests in a non-offensive, tactful manner

7.5    is capable of building trust, inspiring parties concerned and convincing them of its standpoints


**Part 2: Social entrepreneurial Competencies**

**8        Teamwork Competence**

The entrepreneurial team:

8.1    communicates intensively

8.2    communicates important ideas and information openly within the team

8.3    members are satisfied with the exactness of the information

8.4    members support each other the best they can

8.5    puts accomplishment of the team above self-accomplishment

8.6    has a cooperative working atmosphere in which a two-way transmission between people and between groups is encouraged, so that they take part jointly in the organisation's activities

8.7     stimulates interaction and knowledge about each other and each other's work

8.8     ensures an ideal fine-tuning between the qualities, roles and interests of the team

8.9     is aware of the strengths and weaknesses within the team and stimulates the development of a personal team-role style

8.10     challenges team members to act upon their ambitions and talents

8.11     is able to positively influence interaction with others and is able to recognize this process in others

8.12     aims to realize a sense of unity by explicitly naming joint responsibilities and interests

8.13     feels responsible for promises made and obligations assumed


## 9      Leadership Competence

The entrepreneurial team:

9.1     creates and maintains a good organisational climate, in which individual members can be motivated to achieve necessary objectives

9.2     motivates employees towards set goals by using reward systems, coaching and encouraging

9.3     aims to achieve a constant improvement of the performance of its employees

9.4     has an eye for talent and enables personnel consciously to carry out appropriate career development through self-assessment, training and opportunity seeking

9.5     enables people to learn from their mistakes and gives careful (requested and uninvited) feedback, both negative and positive, about the behaviour and performance of others for them to become aware of their behaviour and its effect on others

9.6     delegates responsibilities to as low a level as possible and displays faith in those who are assigned tasks and responsibilities. Also delegates difficult and honourable tasks and responsibilities

9.7     is able to identify key people and ensure their support

9.8     empowers and involves employees to create a shared vision and reduce resistance to change

9.9     is able to empathise with other people's interests and the cultural differences, standards and values that go with it

9.10    recognizes people's needs and explains the possibilities of them being fulfilled in appropriate terms without losing track of the organisation's interests

9.11    bridges differences of opinion between parties and within the organisation and prevents conflicts of interest by openly discussing the various interests (conflict management)

9.12    realizes in which ways it influences others and gives the right example. Reflects the values of the organisation with its attitude and behaviour

9.13    succeeds in persuading others for plans and ideas (persuasiveness)

9.14    promotes the interests of its organisation in direct contact with discussion partners in such a way that favourable results are achieved, without losing its dignity (negotiating).

## 10 Networking Competence

The entrepreneurial team:

10.1    has the ability to work cooperatively with external technology, marketing and financial partners to achieve strategic goals

10.2    develops and perpetuates formal and informal contacts within and outside of his organisation

## Part 3: Functional Entrepreneurial Competencies

*Commercial Management competencies*

## 11      Strategic marketing competence

The entrepreneurial team:

11.1    attributes the highest priority to marketing management

11.2    has the ability to clearly position its offering in the market

11.3    knows how to overcome market entrance barriers

11.4    is able to precisely define the target market and name the most important internal and external customers

11.5    has the ability to develop a comprehensive marketing concept

## 12      Market analysis competence

The entrepreneurial team:

12.1    is able to evaluate the requirements and wishes of the customers

12.2    has the ability to assess the market and sales potential of the markets accurately

12.3    knows the strengths and weaknesses of the competition within the product market combination

12.4    Deals with the customer's wishes in a flexible manner without losing track of the interests of his own organisation

## 13      Transactional marketing competence

The entrepreneurial team:

13.1    is experienced in creating an attractive offering for the customer by drawing on product, price, etc.

13.2    is able to present the differentiation of the offerings with regards to the competitive landscape

13.3    can adapt well to the specific customer requirements

## 14       Relational marketing competence

The entrepreneurial team:

14.1    is able to present a professional corporate identity of the company

14.2    knows about the importance of early customer contacts

14.3    has experience to determine which customers are valuable for the company

14.4    has a special ability to adapt to different types of customers

## 15       Sales Competence

The entrepreneurial team:

15.1    is able to translate solutions to consumer and market value, using market analysis data

15.2    is able to calculate market level sales prices, based on market analysis data, using adequate tools

15.3    is able to make a first contact with potential customers in direct and indirect sales

15.4    operates in an active and efficient manner during acquisition and approaches the customers effectively

15.5    recognizes and responds to the needs of the customer in a sales conversation

15.6    is able to negotiate the sales price with the customer

15.7    is able to make a realistic sales budget

15.8    is able to draft and execute a sales plan as part of the business plan

15.9    is able to evaluate the feasibility of a sales plan

15.10  has implemented a customer relationship management system

*Technology Management Competencies*

## 16       Strategic Technology management Competence

The entrepreneurial team:

16.1    attributes prime importance to technology management

16.2    has a profound technological understanding

16.3    is following a clear technology strategy

16.4    primarily selects customer orders that imply a technological advancement

**17      Technology analysis Competence**

The entrepreneurial team:

17.1    analyzes the firm's competitive standing with regards to technology

17.2    is able to identify future requirements using future technology applications

17.3    has the ability to identify technology opportunities and threats


**18      Internal technology development Competence**

The entrepreneurial team:

18.1    precisely defines the characteristics of the products, which are developed, the time-table and the budgets

18.2    has experience in synchronizing product and production development

18.2    has knowledge about managing complex projects


**19      External technology acquisition Competence**

The entrepreneurial team:

19.1    is able to involve the customer closely in the development efforts

19.2    pursues collaboration with scientific institutions in order to obtain technology know-how

19.3    enables technology transfer


**20      Technology protection Competence**

The entrepreneurial team:

20.1    is able to protect the technology know-how against competition

20.2    applies measures, to tie employees with special technology acumen to the company

20.3    knows instruments to facilitate technology knowledge sharing of its employees

20.4    knows how to use external technology information


**21      Technology Utilization Competence**

The entrepreneurial team:

21.1    has experience in the joint use of technologies (e.g. joint-ventures, alliances)

21.2    has experience with commercializing its technological know-how (e.g. licensing, sale of technologies, sale of R&D capacity)

21.3    is able to optimally apply its technological know-how with regards to the development of own offerings

Brinckmann Competences

*Financial Management Competencies*

## 22       Strategic Financial Competence

The entrepreneurial team:

22.1    attributes the highest priority to financial management

22.2    has defined its financial goals clearly


## 23       Finance Sourcing Competence

The entrepreneurial team:

23.1    has knowledge about multiple bootstrapping activities

23.2    Has an eye for savings and the efficient use of resources

23.3    has knowledge about public venture funding (institutions, amounts, conditions, deadlines, …)

23.4    has knowledge about conditions and requirements of bank financing

23.5    knows about the conditions and requirements for acquiring money from business angels and Venture Capital funds


## 24       Liquidity management competence

The entrepreneurial team:

24.1    considers negative scenarios in liquidity planning

24.2    knows measures to confront liquidity constraints in the short term

24.3    evaluates the credit history when selecting customers

24.4    is familiar with the payment customs of the industry


## 25       Accounting competence

The entrepreneurial team:

25.1    is able to calculate cost prices and the break even point of their product/service

25.2    is able to construct, justify and evaluate several financial statements (balance sheets, income statement, cash flow statement)

25.3    has the ability to interpret profitability measures (EBITDA, Net profit, return on sales, return on capatial, …)

25.4    is controlling the financial success of the venture regularly

25.5    has an insight in both assets and liabilities and takes them into account when taking initiative

25.6    has knowledge about the appropriate financial structure of its venture

25.7   is evaluating how much capital is needed

25.8   is evaluating economic measures of investments systematically (e.g. amortization, net present value, internal rate of return, return on investment)

25.9   has a fundamental understanding of the tax system

25.10  has a fundamental understanding of the accounting system

25.11  is skilled in invoicing and payment procedures


*Strategic Management Competencies*

**26      Opportunity development Competence**

The entrepreneurial team:

26.1   identifies business opportunities from within and outside the business, both proactively and reactively

26.2   assesses new ideas and developments within and outside the firm and evaluates their potential before acting upon them

26.3   converts new ideas and developments into new or improved strategies, products, services, or markets


**27      Future orientation Competence**

The entrepreneurial team:

27.1   envisions the long-term direction of the business, the responsibility of the business to society, and one's role within the firm.

27.2   sets achievable and realistic strategic goals, as well as contingency plans and plans in both formal and flexible ways, on a short- or long-term basis.

27.3   evaluates and assesses the outcomes of the implemented strategy

27.4   Makes changes in the firm's strategy proactively or in response to changing circumstances internally or in the environment.


**28      Competitive positioning Competence**

The entrepreneurial team:

28.1   understands the rules of the firm's industry. Knows who the important players are and the extent of rivalry in the industry

28.2   positions the strengths and weaknesses of the firm in relation to its competitors. Uses the competitive advantage that the firm has over its competitors.

28.3   uses tactics in facing competitors and can deal with them effectively. Knows with whom to collaborate and with whom not

28.4   understands the core resources, capabilities and competencies of the firm both today and

on the long term

## 29 Holistic thinking Competence

The entrepreneurial team:

29.1 understands the chain of activities within the firm and the firm's position in the wider value chain.

29.2 is able to fit the various parts of the business together into a coherent business model, showing a holistic understanding of the business.

29.3 exploits the firm's resources and capabilities and matches these with the firm's competitive positioning.

29.4 understands the position of the firm in society and the broad consequences of the firm's actions

## 30 Contextual awareness Competence

The entrepreneurial team:

30.1 understands the role of national and business culture on the firm's activities and can exploit these

30.2 understands the legal position of the firm and the various rights and obligations that come with this position

30.3 is informed of important developments in the company's sector and the sectors the organisation shares common ground with

30.4 is well-informed about organisational, economic, social and political developments or other environmental factors

*Organizational Management Competencies*

## 31 Planning Competence

The entrepreneurial team:

31.1 translates the organisation's broad strategy into specific, measurable, accepted, realizable and time-related objectives on a short- or long-term basis

31.2 acquires resources from inside and outside the firm, by establishing networks for the fulfilment of the organisational goals

31.3 recruits personnel with the right and complementary competences

31.4 employs resources in the most effective and efficient ways by developing and using systems and procedures

31.5 provides various routes according to different circumstances prevailing

31.6    adjusts operational goals when needed due to internally or externally changing circumstances

31.7    Is able to accurately estimate how much time certain activities cost


## 32    Organizing Competence

The entrepreneurial team:

32.1    designs tasks for unity of control

32.2    delegates tasks that match the competence level and the circumstances of the employee with assigning responsibilities and authorities

32.3    establishes relationships between employees that need to collaborate, to provide unity of action in pursuit of common purpose

32.4    facilitates knowledge sharing through horizontal linkages, e.g. by project teams

32.5    stimulates a desired amount of controlled conflict and manages its resolutions, to bring about necessary change for improved organisational performance

32.6    is able to shape an adequate organisational structure based on environmental conditions, strategies and founder's characteristics


## 33    Controlling Competence

The entrepreneurial team:

33.1    specifies performance standards in key areas for individuals and groups and has them accepted through participation of those concerned

33.2    makes measurements of actual performance in key areas at agreed frequencies, and compares them with the standards set, in time for action to be taken

33.3    facilitates continuous quality improvement initiatives to increase efficiency and effectiveness

33.4    sees the control process through to its conclusion by action, in changing operations or standards where necessary

33.5    institutes means by which employees can control their performances against objectives and ensures that a proper balance is achieved in the amount of control exerted

33.6    is able to recognise if the company's culture and structure still fit the current development stage of the company in its environment

33.7    phases complex activities into manageable tasks and includes parameters per time phase for the purpose of measuring progress

### 8.9 Assessment: Revised Version of the Communication Competency Scale

Before rating the performance of the assessee, please make yourself familiar with the rubrics of the judgment description at the end of the scale. When an item is not shown at all please estimate the impact of its absence by means of the rubrics.

| Name (Assessee) | |
|---|---|
| Name (Assessor) | |
| Date: | |
| | |
| | |

| **Interventions** | | | | | |
|---|---|---|---|---|---|
| 1. **Encouragers** ('yes', 'right', 'hmhm', etc.) are adequate | | | | | |

| Performance | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Comment | | | | | |

| 2. **Summarizes** main points of the conversation | | | | | |
|---|---|---|---|---|---|

| Performance | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Comment | | | | | |

| 3. Uses **open questions** to get broad insight into certain topics | | | | | |
|---|---|---|---|---|---|

| Performance | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Comment | | | | | |

| 4. Uses **further questions** to concretize certain topics | | | | | |
|---|---|---|---|---|---|

| Performance | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Comment | | | | | |

| 5. The participant refers to **previous statements** of the other party | | | | | |
|---|---|---|---|---|---|

| Performance | -- | - | o | + | ++ |
|---|---|---|---|---|---|
| Comment | | | | | |

| General Communication | | | | | |
|---|---|---|---|---|---|
| 6.   The participant **speaks clearly** | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| | | | | | |
| 7.   The participant uses adequate **speed**, **tone** and **volume** of talking | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| | | | | | |
| 8.   The participant uses **adequate language** which is understood by the other party (adequate technical terms, foreign language…) | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| | | | | | |
| **Communication Climate** | | | | | |
| The participant sustains a constructive **climate** by | | | | | |
| 9.   …including **small-talk** at the begin | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| | | | | | |
| 10.  …being **non-confrontational** when facing differences of opinion | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| | | | | | |
| 11.  …**respecting** the other parties concerns | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| | | | | | |
| 12.  …**using 'we'** instead of 'you' or 'I' when emphasizing mutual interests/concerns | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| | | | | | |

| Nonverbal behavior | | | | | |
|---|---|---|---|---|---|
| 13. **Eye-contact/nodding** is adequate | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| 14. **Posture** is attentive | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| 15. **Gesture/mimic is adequate** | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |
| 16. Nonverbal behavior is **congruent to verbal behavior** | | | | | |
| Performance | -- | - | o | + | ++ |
| Comment | | | | | |

| | | Judgment Description: |
|---|---|---|
| 0 | -- | Qualitative: The performance of the criterion is very poor and influences the conversation negatively |
| 1 | - | Qualitative: The performance of the criterion is poor and leads to minor consequences for the conversation |
| 2 | o | Qualitative: The performance of the criterion is nearly sufficient and needs improvement |
| 3 | + | Qualitative: The performance of the criterion is good |
| 4 | ++ | Qualitative: The performance of the criterion is sophisticated or better |

| Points | Competency Level |
|---|---|
| 0-17 | novice - broad training recommended |
| 18-33 | advanced beginner - broad training recommended |
| 34-41 | competent performer - specific training recommended |
| 42-56 | proficient competent - further training not required |