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Competence Development in Higher Education: Developmental Pedagogical Considerations by Heinrich Roth and Empirical Findings

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Abstract

Heinrich Roth (1906-1983) is considered as the founder of a specific empirical pedagogy in which socialization, learning and development processes are initiated in educational institutions in such a way as to allow children and young people to independently acquire knowledge, skills and attitudes. The ultimate objective of these processes is the development of a competent and responsible (capable of judgement and decision-making) personality. According to Roth (1971) the educational objective of "maturity" is achieved through a combination of professional, social and personal competences. In a study by Frey and Ruppert (2020) the question was pursued as to whether Roth's competence model can be represented in students at the end of their last internships i.e. shortly before the end of their studies in counselling sciences. A total of 452 students were surveyed at the end of their last internships in 2017-2020. 76% of the students were female and their average age was 24.8 years. They were "satisfied" with their studies at the university, "rather satisfied" with their last internships, and they rated their career prospects as "very good". The results show that the modified competence model according to Roth was best replicated in the highly competent students with one correlation and three connecting lines. For the moderately competent students, the model could be replicated with one correlation and two connecting lines. It was only for the less competent students that a strongly modified model was observed in which self-competence plays a central role. With three connecting lines Roth's model is very fragile and does not correspond to his claim that professional knowledge is the starting point of competence development processes and maturity its objective. It is particularly with regard to students who consider themselves to be moderately competent or lowly competent that the critical question of Higher Education didactics must be

investigated in order to determine which concepts are best suited for the development of action competence.

Keywords

Competence Development, Competence Model, Maturity, Studies, Higher Education Didactics

1. Introduction

In the anthropological considerations of developmental education by Heinrich Roth (1971: p. 73), competence development processes rely on learning processes that are significantly influenced by the quality of the teaching processes and the order of learning contents. The ultimate goal of competence development processes is a fully developed, action competent and mature personality i.e. a person capable of making judgements and taking decisions.

The key concept in Roth's competence model is "maturity" defined as a threefold competence (Roth, 1971: p. 389):

1) as *self-competence*, i.e. the ability to be able to act responsibly for oneself,

2) as *factual competence*, i.e. the ability to be able to make judgements and act in professional areas and take on the responsibility for these actions, and

3) as social *competence*, i.e. the ability to be able to make judgements and to act in social, societal and political relevant areas and to also be responsible for these actions.

Roth thus divides competence into three areas: they concern the Self (the subject, the person, the individual), *matter* and *facts* (knowledge, know-how), and *society* or *social life* (attitudes, convictions, attitudes). Action always takes place with others and for others, as the social element is always subject to normative expectations as well as social relationship issues. As Roth interprets maturity through the three so-called sub competences of self-, factual and social competences, he binds maturity firmly to the ability to act (e.g. Frey & Ruppert, 2017).

According to Roth this development of the triad of self-, factual and social competences takes place in four stages leading towards a professional capacity to act:

The *first level* towards professional action competence is the "freely guided movement", i.e. an action carried out from a position where there is a given objective. Once a consciously intended objective has been taken out of the instinctive circle of action, a conscious search for suitable means to reach that objective arises and guided and controlled action emerges. The acquisition of actions that are guided, towards an objective—and take into account the resources available constitutes a clearly identifiable progress: When the previously unified instinctive action is broken down into objectives and resources, the actual objective of an action can be focused upon, presented and defined linguistically.

"Als sprachfähig Gewordenes—und das ist nun der entscheidende Fort-

> schritt der zukünftigen Möglichkeiten menschlichen Handelns—werden Ziele zu Gegenständen des Denkens, also reflexionsfähig, (...) sie sind keine Reize und Signale mehr zum unmittelbaren Handeln, sondern sie werden zu Aufgaben, zu Problemen" (Roth, 1971: p. 450).
>
> "As something that has become capable of speech—this is now the decisive progress of the future possibilities of human action—objectives become objects of thought, i.e. capable of reflection, (...) they are no longer stimuli and signals for immediate action but they become tasks, problems" (Roth, 1971: p. 450).

The conclusion is that only when one learns how desired objectives can be successfully realized in a given environment, do the initially vague expectations and hopes turn into factually competent behaviour. Confidence in one's own abilities grows and wishes are transformed into achievable objectives. The original factual competence turns into the ability to master professional tasks and situations (e.g. Frey, Balzer, & Ruppert, 2014).

The *second level* to action competence is the ability to act in a factually insightful and knowledgeable manner. Factual competence is linked to factual thinking and judgement and to a linguistic conceptual grasp of the factual world (Roth, 1971: p. 467). Factual competence requires the abilities to speak (communicative ability) and to think as well as the critical use of these abilities to exchange, to cooperate and to communicate with other people in a constructive and non-destructive factual attitude.

In linguistically formulated thinking, objectives that were initially expressed visually and imaginatively only turn into mentally anticipated plans of action, they become "hypotheses". Checking the hypotheses against reality leads to ever more precise perceptions of reality, to the acquisition of diverse knowledge, of concepts, categories, principles and to the learning of ways and methods of thinking, to thinking strategies for understanding and applying and finally, to scientific procedures of discovering and solving new problems (Roth, 1971: p. 470).

For factual competence—based on maturity—the intellectual abilities of a person are decisive. In this respect we are dealing here with intellectual maturity. This intellectual maturity as a factual competence can be learned and is connected to cognitive development and corresponding learning activities (e.g. Nagai, 2019; Prosekov, Morozova, & Filatova, 2020; Sakellariou, 2021).

The *third level* of action competence is about the ability to be able to make judgements and to act in social, societal and political relevant areas and, above all, to take on the responsibility for these actions. However, the level of mature action is not yet reached when a person is able to act in a factually insightful manner as every action that is oriented towards various items happens in a social or socio-political context and therefore has societal consequences (Roth, 1971: p. 475).

Mature action requires socially constructive thinking and behaviour that is

both knowledgeable socially sensitive. Socially just "forms of equilibrium" between the subject and the object, the Ego and the environment must be thought of in such a way as to serve as instructions for action that allow free and just forms of mediation to take place between individuals, between groups as well as within society. Free and just forms of social mediation have to be understood in such a way that potentially conflictual situations are recognized, that conflicts are articulated and thoroughly discussed, that various alternatives based on consensual decisions are worked out. Here the sensitivity to societal questions and social change then constitute the developmental and educational objective par excellence (Roth, 1971: p. 476).

Here traditionally acquired and/or adopted social and political knowledge and skills as well as internalized social norms are not sufficient but critical and creative social behaviour based on one's own capacity for insight is required. The human and social significance of a situation must be understood, a productive response to the challenge or task must be generated and an explorative reaching out beyond the skilful and proven social roles and behaviour patterns must take place. In socially sensitive and constructive behaviour and thinking, productivity is at the forefront of human performance as a constantly renewing productive social (societal?) initiative (Roth, 1971: p. 477):

> "...als Entwicklungssoll [steht] die Produktivität, die kritisch und kreativ im Sinne einer vorwärtstreibenden Dynamik zu immer besseren, gerechteren und freieren sozialen Gleichgewichtsformen strebt, weil zuletzt nur diese (...) zwischen dem einzelnen und der Gesellschaft wie zwischen Gruppen und der Gesellschaft einen produktiven Ausgleich gewährleisten kann (...)" (Roth, 1971: p. 478).
>
> "...the development objective is productivity which in the sense of a forward-driving dynamic strives critically and creatively towards ever better, fairer and freer forms of social equilibrium because only this (...) can guarantee the productive balance between the individual and society as well as between groups and society (...)" (Roth, 1971: p. 478).

For Roth social competence is illustrated in active, reflective and constructive dealings in all its breadth, in open and critical, even innovative dealings i.e. in socially competent action. Activity, reflexivity, constructiveness, openness, criticism and creativity are the qualities of a subject who in his or her socially competent action, wants to find a path between freedom and commitment, between independence and dependence, between self-discovery, self-actualization, self-assertion and cooperation, devotion and adaptation acceptable to him or her and to others. Socially competent action also includes participation in social life and in the resolution of societal conflicts as well as a rational interpretation of drives, affects and emotions in social relationships (Frey & Ruppert, 2017).

This social competence can be learned at school as well as in Higher Education with the social learning process passing through the stages of identification—internalization—imitation—rational consciousness—interpretation of so-

cial behaviours and their norms—discussion of norms—rational interpretation of drives, affects, emotions and of emotional valuations (Roth, 1971: p. 477). The main objective is a rational level of responsible social behaviour i.e. socially competent action.

The *fourth level* of action competence includes the ability to act responsibly for oneself. In addition to cognitive and social skills, moral competence is of considerable importance. Moral behaviour in the narrower sense is qualitatively characterized by the fact that in ethically acute conflict situations, individuals are expected to take self-determined actions which are taken on their own responsibility, out of their own insight and which have become "life-leading" for the individuals concerned. It follows that they may be taken for reasons of conscience against one's own good and, under certain circumstances against one's own society (e.g. Nucci & Il-ten-Gee, 2021).

Here an individual acts out of self-insight and self-competence in moment of solitude: He or she takes a so-called "lonely decision" based on an idea, a belief, a conviction, a decision that no one can take off him or her. In such moral decisions the point of reference no longer is the reference group only but one's own moral conviction, possibly faith in God, a religious background of hope or even contempt (Roth, 1971: p. 531).

> "Die Verankerung der unverzichtbaren humanen Prinzipien und Ideen der Menschheit ins Gewissen des einzelnen bleibt eine der unverzichtbaren Aufgaben der Erziehung. Das bedeutet ein Festhalten am selbständigen Individuum als einer unaufgebbaren historischen Errungenschaft, als einer Instanz des Widerspruchs gegen die Zwänge der Gesellschaft, als einer möglichen unabhängigen moralischen Instanz, als Moment der Freiheit, als Subjekt der Erziehung wie der Geschichte" (Roth, 1971: p. 600).
>
> "The anchoring of indispensable humane principles and ideas of humanity in the conscience of an individual remains one of the imperative tasks of education. This means holding on to the independent individual as an indispensable historical achievement, as an instance of contradiction against the constraints of society, as a possible independent moral instance, as a moment of freedom, as a subject of education as well as of history" (Roth, 1971: p. 600).

Roth explains self-competence as the ability to preserve one own identity, as the ability to have inner moral power which enables individuals to remain "true" to themselves. He connects self-competence to the Ego, the Self, to autonomy, to the personality and self-reliance of an autonomous individual. He furthermore connects self-competence to reasons of conscience, to moral attitudes, to the cognitive development that enables the shift from heteronomy to autonomy and to moral judgement. Self-competence as a moral maturity has to be learned through the cognitive development of the ability to make moral judgements (Roth, 1971: p. 539).

Self-competence cannot exist on its own as self-competence is the ability to act

on one's own responsibility and therefore is always related to subject matters and subject areas. Action is always factual, action always relates to fellow human beings people, to community and society. Action is always interpersonal action i.e. it is always interactive.

1.1. The Theoretical Model for the Development of Action Competence

Since according to Roth, the ability to act must be a moral ability, he develops a competence model in a hierarchical form: Cognitive learning processes result in professional competence, social learning processes in social competence. Professional and social competences in combination with moral learning processes, form the prerequisite for a moral maturity that allows the self-determination of a person. The educational objective of "maturity" is thus achieved through the combination of professional, social and personal competences.

Roth defines competence as the feeling of being able to cope with situations appropriately with human action being to a large extent geared towards experiencing this feeling. He takes up this naturally motivating aspect of competences in order to make it usable for developmental and educational processes in the three fundamental concepts of knowledge, the social and the self as forces acting from the goal.

Figure 1 illustrates Roth's idea of how professional competence (ProCo), self-competence (SeCo), social competence (SoCo) and maturity (MAT) influence each other.

The competence development model shown in Figure 1 can be interpreted as follows: Professional competence (ProCo) influences social competence (SoCo) and maturity (MAT) as the starting point of the model and interacts with self-competence (SeCo). Self-competence influences social competence and social competence in turn determines maturity. Thus, professional competence has a direct influence on maturity as well as an indirect one via self-competence and social competence.

Competence development in Roth's sense is a never-ending process through which an ever higher quality of action can and should be achieved over the time. All competences can be learned in a conducive learning environment through the acquisition of knowledge and the constant transfer of knowledge into action.

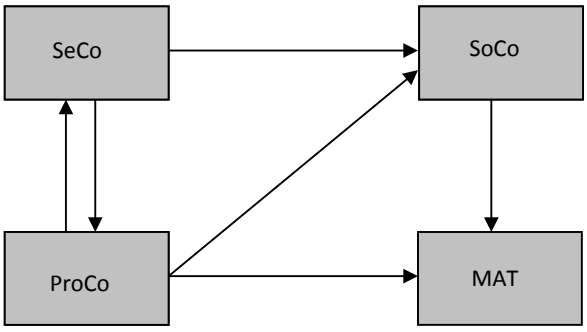

Figure 1. The competence development model according to Roth.

1.2. The Empirical Model for the Development of Action Competence

The various/different phases of professional practice play an important part in the career guidance training curriculum as it bridges the gap between Higher Education which focuses on knowledge, analysis and reflection, and the professional activities in career guidance and counselling which focus on professional competence (Deuer, 2021; Merkt, 2021; Seifried, Brodsky, & Sailmann, 2021).

Following Roth (1971), Ertelt, Schulz and Frey (2022) divide the competences of prospective career guidance counsellors into four competence classes: Professional knowledge (technical and methodological competence), self-competence, social competence and self-regulatory competence (independence, ability to judge and take decisions, maturity).

Within the competence class of professional knowledge, expert knowledge, counselling knowledge and pedagogical-psychological knowledge are of great relevance. It is obvious that professional knowledge dominates the curriculum while the three competence classes of self-competence, social competence and self-regulatory competence are presupposed as existing conditions that must be intensified in a development perspective—e.g. through the internships.

However, precisely these elements of professional action competence cannot be comprehensively taught within the science-based curriculum at the University of the Federal Employment Agency (HdBA) and must therefore regarded as a deepening developmental pedagogical addendum to the professional practice elements in the study of counselling sciences. According to Roth (1971), only the interaction of all four competence classes leads to professional action competence (**Figure 2**).

Figure 2 shows how the four competence classes of action competence in the curriculum of counselling sciences (should) correspond with each other: Professional knowledge (ProCo) interacts with self-competence (SeCo) and is probabilistically related to social competence (SoCo) and to self-regulatory competence (SRCo). Self-competence influences social competence which in turn impacts self-regulatory competence. Consequently, this interplay of the four competence classes means that professional knowledge and self-competence (must)

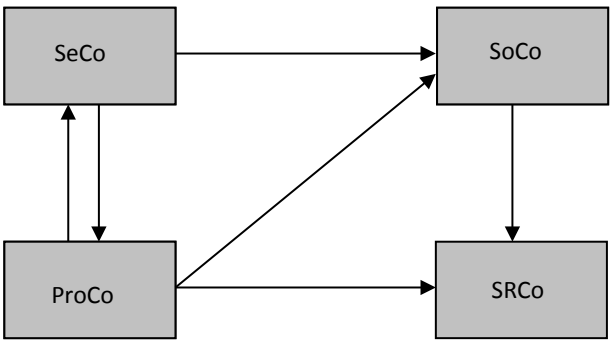

Figure 2. Interaction of the four competence classes in an adapted structural model according to Roth.

represent two central elements of the sciences of counselling and that professional knowledge cannot be trained in an isolated manner (see also Sultana, 2009).

1.3. Question

From this developmental pedagogical perspective the question arises as to whether at the end of the students' last internship i.e. shortly before the end of the study programme of counselling sciences, the competence classes can be depicted in the above-mentioned competence structure and whether self-regulatory competence can be represented as the target point of developmental processes.

Additionally the study conditions cannot be assumed to be homogeneous for all of the students so that they would have to be controlled as intervening variables.

2. Method

For the study "Behaviour of adolescents and young adults in the vocational and academic orientation phase and their educational and academic success" by Frey and Ruppert (2020), a version was chosen based on Ertelt, Schulz and Frey (2022), Sultana (2009) and Schiersmann et al. (2012), and consisting of 23 scales (138 items) divided into four categories:

- Professional knowledge (e.g. technical and methodological competences, counselling skills, knowledge about professions and regional labour markets);
- Self-competences (e.g. the ability to learn, curiosity, self-efficacy, achievement motivation, empathy);
- Social competences (e.g. communication skills, critical ability, cooperation skills);
- Self-regulatory competence (e.g. independence, ability to judge and make decisions, maturity).

The assessment sheet contained statements that were to be evaluated as a function of their applicability. The following answer format was used: 1 = strongly agree; 2 = agree; 3 = rather agree; 4 = rather disagree; 5 = disagree; 6 = strongly disagree.

3. Results

The study surveyed 452 students at the end of their last internship shortly before the end of their studies in Counselling Sciences at the University of the Federal Employment Agency (2017-2020). 76% of the students were female and the average age of the respondents was 24.8 years. They were satisfied with their studies at the university and rather satisfied with their last internship and they rated their career prospects as very good.

3.1. Results on the Reliabilities of the Scales

Statements about the reliability of the assessment questionnaire with regard to

its scales were determined with the help of reliability analyses (Cronbach's α as a characteristic value for internal consistency). As for the different scales, the reliabilities lie between α = 0.70 (judgement) and α = 0.91 (counselling skills), and indicate a sufficient to very good degree of internal consistency of the individual scales for a group comparison. Finally the superordinate coefficients at the level of the competence classes lie between α = 0.89 (self-regulatory competence), α = 0.90 (social competence), α = 0.93 (self-competence) and α = 0.95 (professional knowledge) (Table 1).

Table 1. Reliabilities of the scales and competence classes.

	α
Knowledge of Professional Competence (10 scales)	**0.95**
Information about professions and regional labour markets	0.74
Self-organisation	0.75
Competence assessment	0.76
Cooperation with schools, chambers	0.78
Shaping group processes	0.79
Analytical skills	0.81
Goal-oriented action	0.82
Media and information material	0.82
Reflexivity	0.86
Counselling skills	0.91
Self-Competence (5 scales)	**0.93**
Curiosity	0.72
Empathy	0.80
Achievement motivation	0.86
Self-efficacy	0.88
Ability to learn	0.89
Social Competence (4 scales)	**0.90**
Communication skills	0.73
Ability to cooperate	0.79
Conflict resolution skills	0.79
Social responsibility	0.86
Self-regulatory Competence (4 scales)	**0.89**
Ability to judge	0.70
Decision-making ability	0.72
Autonomy	0.81
Maturity	0.88

3.2. Descriptive Results for the Scales and Competence Classes

In the following section the descriptive measures of the individual scales and competence classes of the students are presented. For this purpose, the mean value and the standard deviation are firstly shown for each scale and each competence class (Table 2).

The mean values in Table 2 show the following picture: The mean values lie within a range of M = 1.98 (empathy) and M = 2.77 (analytical ability) in all four competence classes. Within professional competence class (M = 2.26), the students rated counselling skills (M = 2.00) highest and analytical skills (M = 2.77)

Table 2. Means and standard deviations of the scales and competence classes.

	M	SD
Knowledge of Professional Competence	**2.26**	**0.68**
Information about professions and regional labour markets	2.12	0.69
Self-organisation	2.08	0.71
Competence assessment	2.67	0.79
Cooperation with schools, chambers	2.29	0.77
Shaping group processes	2.24	0.80
Analytical skills	2.77	0.83
Goal-oriented action	2.02	0.70
Media and information material	2.12	0.79
Reflexivity	2.33	0.88
Counselling skills	2.00	0.68
Self-Competence	**2.23**	**0.73**
Curiosity	2.39	0.70
Empathy	1.98	0.64
Achievement motivation	2.18	0.76
Self-efficacy	2.20	0.80
Ability to learn	2.43	0.78
Social Competence	**2.20**	**0.75**
Communication skills	2.29	0.72
Ability to cooperate	2.27	0.80
Conflict resolution skills	2.22	0.81
Social responsibility	2.02	0.65
Self-regulatory Competence	**2.29**	**0.79**
Ability to judge	2.35	0.77
Decision-making ability	2.27	0.82
Autonomy	2.24	0.81
Maturity	2.30	0.79

lowest. In the self-competence class (M = 2.23) students rated empathy (M = 1.98) highest and learning ability (M = 2.43) lowest. And within the social competence class (M = 2.20) the mean values ranged from M = 2.02 for social responsibility to M = 2.29 for communication skills as well as regards self-regulatory competence (M = 2.29) from M = 2.24 for independence to M = 2.35 for judgement.

In summary the average values of all four competence classes from M = 2.20 to M = 2.29 are high and the students' competence assessments at the end of their studies are consistently in the positive range.

3.3. Results on the Competence Structure Models

Classifying competence clusters

In order to identify students with similar competence structures, the data were subject to a non-hierarchical cluster analysis. In this process a statistical-inductive method is used to identify types of students who are characterised by similar values in the four competence classes within a cluster and by different values between the clusters. Three competence clusters were to be analysed, with one cluster containing highly competent students, one cluster containing moderately competent students and one cluster containing students with below-average competence assessments. An optimal separation of the competence clusters is at a value of $p < 0.05$. The mean values and standard deviations of the competence clusters obtained are shown in Table 3.

The results in Table 3 show that the 452 students could be divided into the three competence clusters of low, medium and high competence ($p < 0.000$). In cluster 1 there were 92 students (20%) with a low competence attribution (range from M = 3.09 to M = 3.51), in cluster 2 there were 186 students (41%) with a

Table 3. Means and standard deviations of the three competence clusters.

		ProCo	SeCo	SoCo	SRCo
Cluster 1	N	92	92	92	92
	M	3.09	3.51	3.20	3.15
	SD	0.40	0.64	0.37	0.51
Cluster 2	N	186	186	186	186
	M	2.40	2.56	2.55	2.32
	SD	0.32	0.39	0.37	0.35
Cluster 3	N	174	174	174	174
	M	1.73	1.82	1.79	1.90
	SD	0.31	0.33	0.33	0.32

ProCo = professional competence; SeCo = self-competence; SoCo = social competence; SRCo = self-regulatory competence; Cluster 1 = low competence attribution; Cluster 2 = medium competence attribution; Cluster 3 = high competence attribution; a low value corresponds to high abilities in a competence class.

medium competence attribution (range from M = 2.32 to M = 2.56), and in cluster 3 there were 174 students (39%) with a high competence attribution (range from M = 1.73 to M = 1.90).

Structural equation models

This section examines in which structure of the professional knowledge, self, social and self-regulatory competence class can be found for each of the three competence clusters. One assumes that the structural model described in Figure 2 can be replicated for students who achieve high competence scores. In contrast, it is assumed that the structural model of highly competent students cannot be replicated for students with medium or low competence scores.

Figure 3 shows the structural relationship for highly competent students.

The result of the path analysis in Figure 3 (p = 0.59; RMSEA = 0.000; GFI = 1.00; AGFI = 0.98) indicates good model quality. Roth's competence structure model (see Figure 2) can be represented well (however without the SoCo-SRCo connection). Indeed, the model for the highly competent students in cluster 3 already reproduces the model described in Figure 2 very well in some subareas: Self-competence (β = 0.34) and professional knowledge (β = 0.20) are structurally related to social competence and self-competence and professional knowledge correlate with each other (ϕ = 0.47). In addition, professional knowledge influences self-regulatory competence (β = 0.21). This model shows that the four competence classes are structurally related.

Figure 4 shows the structural relationship for moderately competent students:

The result in Figure 4 shows Roth's structural model for moderately competent students in Cluster 2 and indicates satisfactory model quality (p = 0.10; RMSEA = 0.060; GFI = 0.99; AGFI = 0.97). The model shows that for students in cluster 2, professional competence correlates with self-competence (ϕ = 0.41) and that it influences self-regulatory competence (β = 0.18). In addition, self-competence determines social competence (β = 0.29). This structural model proves that the four competence classes are also structurally correlated with the moderately competent students although this model does not show any connection neither between professional knowledge and social competence nor from social competence to self-regulatory competence.

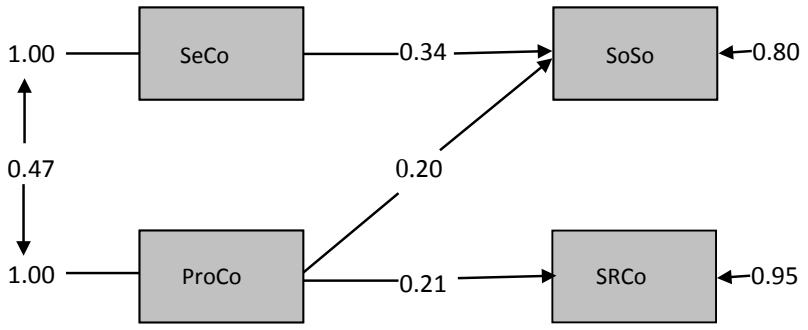

Figure 3. Structural model for highly competent students (cluster 3). χ^2 = 1.37; df = 2; p = 0.59; RMSEA = 0.000; GFI = 1.00; AGFI = 0.98. ProCo = professional competence; SeCo = self-competence; SoCo = social competence; SRCo = self-regulatory competence.

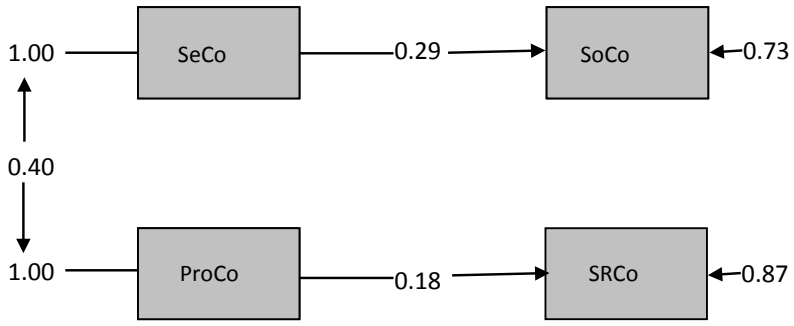

Figure 4. Structural model for moderately competent students (cluster 2). $\chi^2 = 6.55$; df = 3; $p = 0.10$; RMSEA = 0.060; GFI = 0.99; AGFI = 0.97. ProCo = professional competence; SeCo = self-competence; SoCo = social competence; SRCo = self-regulatory competence.

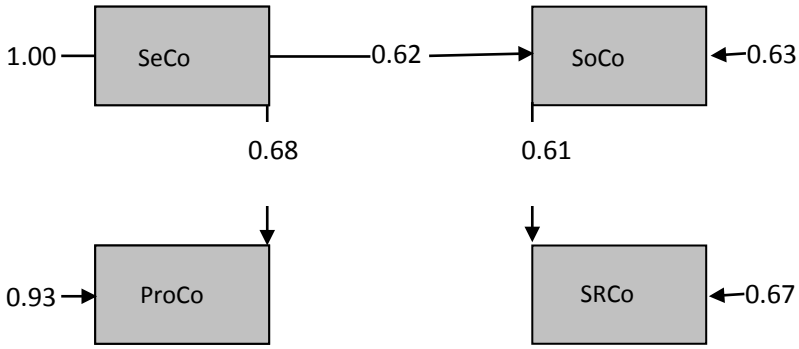

Figure 5. Structural model for low-competent students (cluster 1). $\chi^2 = 169$; df = 3; $p = 0.49$; RMSEA = 0.000; GFI = 0.99; AGFI = 0.98. ProCo = professional competence; SeCo = self-competence; SoCo = social competence; SRCo = self-regulatory competence.

Figure 5 shows the extent to which Roth's structural model can be replicated for the low-competent students in cluster 1.

The result in Figure 5 shows Roth's strongly reduced structural model for the low-competent students in cluster 1 and indicates good model quality ($p = 0.49$; RMSEA = 0.000; GFI = 0.99; AGFI = 0.98). The model shows that for students in cluster 1, self-competence influences both professional Competence (β = 0.68) and social competence (β = 0.62). Social competence relates to self-regulatory competence (β = 0.61). This structural model proves that the four competence classes are also structurally related for low-competent students. Nevertheless this model does neither show any correlation between professional knowledge and self-competence nor any connection between professional knowledge and social competence and to self-regulatory competence. New in this model is however a connection between social competence and self-regulatory competence.

4. Summary

According to Heinrich Roth (1971) the development of competences is a never-ending process through which an ever-higher quality of action can and should be achieved over the time span of human development. All the compe-

tences can be learned in a conducive teaching-learning environment through the acquisition of knowledge and the permanent transfer of this knowledge into action. If Roth's thoughts that competence to act is fed from the three areas of professional, personal and social competence, with the developmental objective of a mature personality, are transferred into a professional competence model, this model comprehends four competence classes (Ertelt, Schulz, & Frey, 2022): professional knowledge, personal and social competence and self-regulatory competence. In this model professional competence influences the three competence classes in a direct way whereas self-regulatory competence is the objective of professional development processes (Sultana, 2009).

In a study by Frey and Ruppert (2020) a questionnaire was developed to assess the four competence classes in 452 students at the end of their studies in career counselling sciences. Reliability analyses show that the scales and competence classes have a sufficient to very good degree of internal consistency for a group comparison.

Mean value calculations show for all four competence classes that the students' self-assessments at the end of their studies are consistently in the positive range (between M = 2.20 and M = 2.29). Within the professional knowledge (M = 2.26), the students rate the counselling ability (M = 2.00) highest, the analytical ability (M = 2.77) lowest. In the self-competence class (M = 2.23), students rate empathy (M = 1.98) highest and learning ability (M = 2.43) lowest. Within the social competence class (M = 2.20), the mean values range between M = 2.02 for social responsibility and M = 2.29 for communication skills, and for self-regulatory competence (M = 2.29) between M = 2.24 for independence and M = 2.35 for judgement.

A cluster analysis showed that the students could be divided into three different competence groups. In cluster 1 students with a low level of competence could be found, in cluster 2 students with a medium level of competence and cluster 3 students with a high level of competence. Overall 20% of the students could be described as low-competent, 41% as medium-competent and 39% as highly competent.

By means of structural analyses it was shown that the modified competence model according to Roth could be replicated best for the highly competent students with one correlation and three connecting lines. For the moderately competent student, the model could be replicated with one correlation and two connecting lines. Only for the low-competent students a strongly modified model was found in which self-competence plays a central role. With three connecting lines this model is very fragile and does not correspond to Roth's intention that professional knowledge is the starting point for competence development processes.

All three competence models however have in common that at the end of the studies of counselling sciences the competence classes can be found in a competence structure and that the self-regulative competences are the objective of development processes. Furthermore, it could be shown that the entire competence

development process does not unilaterally refer to the development of isolated professional knowledge but also to self- and social competences and especially to self-regulatory competences. If the objective of Higher Education is to develop competent professional personalities, then the teaching and learning processes of the curriculum must be adapted so that all four competence classes may contribute to the professional and personal development of the students.

Hence Roth's anthropological competence model with its developmental pedagogical perspective is an important model for examining the effectiveness of teaching-learning processes in Higher Education institutions and in professional practice.

In addition to the synergetic design of cognitive learning objectives and learning contents in the various study and internship phases, the main focus should be on the design of learning and experience spaces adapted to the four competence classes in the respective learning locations, an approach which requires science-based didactics in Higher Education.

5. Consequences for Higher Education

The results illustrate that studying and academic success are increasingly characterised by diversity and that, at the same time, research-based, discovery-based and lifelong learning must become ever more important if well-educated graduates are to be released into the world of work and if the number of potential dropouts from Higher Education is to be reduced.

Hence the training of students in key competences is of the greatest relevance. Such competences describe skills and attitudes students have to acquire that go beyond the mere acquisition of subject knowledge. These skills and attitudes should enable students to meet the requirements of different and new learning and working environments as well as of societal and cultural contexts and furthermore allow them to cope with learning and employment crises (Lamarutti & Mir, 2021). These skills and attitudes primarily relate to the following areas of Higher Education:

- In order to guarantee future professionalism and employability of graduates, Higher Education has to relate more closely to practice. Indeed, if Higher Education remains defined by subject contents only, it will no longer meet the requirements of professional practice, especially in the context of the digital transformation of the world of work.
- Higher Education should promote international mobility as well as the training in and the acquisition of intercultural competences of students through strategies supporting international internships.
- Higher Education must clarify the relationship between academic quality and employability: hence study contents must be further specified and the part of non-academic requirements and key competences of the curricula must be clearly explained. In this context professionalism and employability must not limit themselves to the integration of practice components into the curricula

but promote research-oriented training that advances the students' individual learning and transfer skills.

- Furthermore, key competences must be imparted more comprehensively through Higher Education. These processes must be made more visible, they must be improved through innovative forms of teaching and learning. Finally, the competences students must acquire have to be defined more precisely as well as be tested and further developed in professional situations.

In order to implement the aforementioned measures in Higher Education, new and innovative teaching and learning cultures are required at university that promote a didactic change in perspective from teaching to learning. Such an approach implies in particular a heightened focus on the students themselves, a change in the role of the lecturer from teacher to coordinator, the promotion of self-organised and research-based learning in students with a particular emphasis on the obtention of results as well as of learning strategies that take into account the students' motivational and social characteristics (Berendt, Voss, & Wildt, 2002). The basis of the trends in Higher Education described above is to be found in the competences that future university graduates will need in changing work environments. The paradigm shift from subject catalogues to competence orientations has already been accepted by the majority of thinkers and is not being questioned even if associated terms, definitions and concepts are still being defined and arranged in different ways. In this context it is possible to turn to Dohmen's (1999) idea of self-directed learning as supported self-learning, an idea that is now gaining greater practical relevance due to changed framework conditions and requirements.

In the coming years Higher Education institutions will be faced with the challenge of imparting to their students' academic, subject-related, career-oriented and personality-shaping knowledge, skills and attitudes. The formidable task for Higher Education institutions is that all four constructs must be reviewed for each and every study programme, for each and every teaching and learning content, and that in addition all the lecturers at Higher Education institutions must receive further pedagogic and methodological training. According to Wilde (2017) universities, businesses and other players in education will in the future be called upon to take on greater responsibility for Higher Education and to develop and implement with Higher Education institutions innovative teaching-learning networks.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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