Spatial Citizenship – Dimensions of a Curriculum

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Abstract

Citizenship education in modern society demands new competences in the 21st century. The rise of digital (geo-) media combined with the web 2.0 are changing students' everyday lives, in particular with regard to dealing with spatial information and spatial represent-tation. The spatial citizenship approach is dedicated to these topics within the debate on citizenship education at secondary school level. The debate links terms such as mainstream technology, reflection, reflexivity, communication, participation and negotiation to terms such as geomedia, spatial information and spatial representation. This article discusses the competences which are essential for the development of a curriculum for teacher training and its supporting materials within the area of spatial citizenship education. In the first part of the article we will argue that spatial citizenship is a case for a curriculum. In the second part, we will discuss various approaches of competence models which are relevant for developing a teacher training curriculum, e.g. in the field of Vocational Education and Training (VET). We in particular address these issues from the point of educational research and cognitive competence modelling and assessment as well as from the perspective of competence-based curriculum development in higher education in Europe, which is mainly influenced by the Bologna Reform. In the third part we will identify relevant competence domains. These domains will be analyzed according to their useful-ness for constructing a web of competences for a curriculum for teacher training on spatial citizenship which brings together geography, GIScience & Technology, philosophy, politics and communication. The article will close with a discussion of a relevant com-petence model and competence dimensions, identifying further work to be done for the curriculum development.

1   Introduction

Formal education is on a flux – which is a quite natural phenomenon. However, rarely has the education system been so much affected by recent developments that require changes at different levels simultaneously as it is the case today. Globalization and the rise of digital media combined with the web 2.0 are changing students' everyday lives. These substantive changes on the global level have fundamental influence on the educational system of many states and nations. Educational issues have top priority on many political agenda since education has to extend into new content areas, e.g. into economic, environmental, participatiory, spatial and information and technology areas. THIEM (2009) argues that under these circumstances "education becomes a strategic foundation for local organizing and claims for social justice" (p. 159) and, therefore, "the relationship between educational provision and community development might also be revisited" (p. 158). For this reason citizenship education is crucial. TEN DAM & VOLMAN (2004) point out that regarding

citizenship education "nowadays people are not expected to 'know their place' but to 'determine their own position'. A 'critical' approach is frequently appreciated more than subservient accommodation. It is a question of making choices and knowing why you are making that choice, respecting the choices and opinions of others, communicating about these, thereby forming your own opinion, and making it known" (p. 359). Consequently, this means that citizenship is interwoven with the geographies of everyday. To put it differently, citizenship is "the outcome of the meeting of myriad personal and political interdependencies, multilocally infused and contingent upon overlapping and interdependent sets of individual actions and institutional processes" (DICKINSON 2008, p. 108). Today these processes are often organized by digital globes, online geocommunities and social networking which provides citizens with a variety of spatial information and spatial representations – influencing the political processes on the local, regional and global level.

This alteration means also changes of the content of secondary school curricula. GRYL & JEKEL (2012) have analysed this development in learning with geoinformation and have come to the conclusion that in secondary school this subject must be re-examined. The ability of critical thinking and acting in relation to spatial geomedia applications is the educational focus of their spatial citizenship approach. The spatial citizen should be able to participate in a geomedia society. Therefore, he or she needs technical / methodical competences to handle spatial representations, the competence to communicate with and actively participate in spatial representations, and the competence to reflect, evaluate and appraise the use of spatial representations (ibid.). Since the use of digital geomedia such as digital maps, digital globes, GPS- and GIS-based tools is a basic cultural technique, education at secondary school must strongly support the empowerment of spatial citizens using these instruments. This recentering and subsequent reinterpretation of learning with geoinformation in secondary schools has transformative potential due to the embeddedness of pupils with everyday geomedial practices. Teachers whose goal is to educate their pupils with a spatial citizenship approach need to be trained to do so. Thus, there is a strong need for a curriculum for teacher training and teacher education with regard to the spatial citizenship approach. This in turn leads to the question about which competences need to be considered for such a curriculum and its supporting materials.

To answer this question, we will first discuss different aspects of competence modelling. Since modelling competences and curriculum development go hand in hand, the first step necessary for competence modelling is to discuss and question concepts of competence modelling and their theoretical backgrounds, in order to identify the best approach for a teacher training concept. In a second step, we will specify different domains of competences for a curriculum of spatial citizenship in teacher education. We will conclude this article by summarizing the main results and pointing out the directions that future work needs to take.

2   Competences in Discussion

Besides the fields of psychology and educational research, for many domains and professional fields 'competence' has evolved as a key term in recent years, since it "characterize[s] the changing demands of modern life and the working world, as well as the

educational goals involved" (KOEPPEN et al. 2008, p. 62). Nowadays, on the global scale, the changes resulting from an input orientation of educational processes to the emphasis on the learning outcome of the individual is increasingly fundamental for the formulation and measurement of educational goals. Nevertheless, the subsequent regulation of education systems due to the needs of the information-based knowledge society and the increasing mobility of the workforce in global competitive labour markets is also seen critical, as an ongoing massification and economisation of education (cf. KRAUTZ 2009, ARROWSMITH et al. 2011, WHALLEY et al. 2011). In this context, it is not surprising that there is no common understanding of this 'fuzzy concept' of competence yet (DELEMARE LE DEIST & WINTERTON 2005), since it is related to a variety of terminological and conceptual approaches and meanings in different social-cultural contexts and educational discourses (cf. KLIEME & HARTIG 2007). Therefore, as HARTIG (2006) states, it is important to formulate an explicit working definition that clarifies what is to be understood as competence – depending on specific questions and criteria as well as taking the respective pedagogical and psychological approaches, specific domains or educational policy frameworks into consideration.

As STRACKE (2011, p. 13) points out the competence concept simply "offers a theoretical foundation for the development of strategies, methods and means for solving the current task". In light of the changing demands in educational processes, 'competence' serves as a conceptualisation of complex constructs of abilities and skills which are connected to the challenges of real-world situations (cf. KOEPPEN et al. 2008). Within VET, this aspect has been used as a key concept in the field of Human Resource Development (HR) for "strategic management practices of recruiting, selecting, […] and training employees and evaluating employee performance" (ENNIES 2008, p.10) for more than two decades. For example in anglophone countries (e.g. USA, UK) 'competence' refers to the measurable qualifications in terms of functional knowledge and skills as well as the individual's underlying behavioural characteristics to effectively drive performance in the job in line with defined work-based qualifications and nation-wide occupational standards (WINTERTON, DELAMARE LE DEIST, STRINGFELLOW 2006). In contrast, from the perspective of educational research and pedagogical psychology, 'competence' is understood more widely as 'capacity'. Therefore, it is defined as a learnable context-specific (cognitive) disposition that enable the individual to deal appropriately and successfully within unknown situations and particular types of problems in specific domains, depending on facets of knowledge and ability, understanding, skill, action, experience, and motivation (cf. KOEPPEN et al. 2008, KLIEME et al. 2004).

Both fields of competence development and curriculum planning are founded upon the theoretical description of the interplay of subject-related and generic competences within the form of competence models. For example, VET competency models generally serve as a "descriptive tool" that "identifies the competencies needed to operate in a specific role within a(n) job, occupation, organization, or industry" (ENNIS, 2008, p. 5). In the current US job market exist a set of twenty standardised competency models for different sectors such as bioscience, energy, retail or geospatial technology (cf. DoLETA 2012). These industry competency models serve as a basis "for developing curriculum and selecting training materials, (…) for licensure and certification requirements, job descriptions, recruiting and hiring, and performance reviews" (ibid.). In comparison, within educational research competence models are used for the modelling and measuring of cognitive skills and abilites, as was being done within large-scale assessments such as the PISA study.

Therefore, the development of theoretical models of competence is the foundation for both the construction of psychometric models as well as the construction of measurement instruments (KOEPPEN et al. 2008). In this context two groups of theoretical models can be distinguished: First, models of competence structures dealing with the dimensions and relations of the respective competences (HARTIG & KLIEME 2006). Second, models of competence levels dealing with the level grading of competences, as they describe "the specific situational demands that can be mastered by individuals with certain levels or profiles of competences" (KOEPPEN et al. 2008, p. 64).

While the denomination of respective knowledge, skills and competences (KSC) is based on the particular discipline itself and, therefore, subject-specific, the definition of generic competences is more widespread. With regard to educational psychology KLIEME et al. (2004) states that well defined subject-specific competences are a necessary condition for the development of cross-curricular competences or key skills. However, within the last years an appreciation of generic skills and abilities in certain learning and working environments has be noticeable which goes hand in hand with a global harmonisation of key competences. Related to the rapid developments in the information and communication technology sector (ICT) these skills are mainly referred to ICT literacy and the aspect of lifelong learning, and are labelled as *21st century skills*. They include digital skills and technical mastery; information management; research, strategic planning and problem-solving; reflection and critical thinking; communication and collaboration as well as innovation, creativity and productivity (PEDRO et al. 2011).

In European higher education, the development of competence-based curricula is mainly influenced by the Bologna Reform and the creation of a common educational area. Within this process the major goal is to connect subject-related knowledge and generic competences among students in order to enable them to successfully cope with multiple problem- and application-oriented solutions in different learning and working environments. Therefore, five elements denote a Bologna-compliant learning process: knowledge and understanding; applying knowledge and understanding; making judgments; communication skills; and social competence/self-learning capabilities. For the implementation of the European competence concept two documents are crucial. The first one is The *European Qualifications Framework for Lifelong Learning* (EQF) of 2008. Within this most important EU educational policy framework 'competence' is defined as "the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. (…) competence is described in terms of responsibility and autonomy" (EUROPEAN COMMISSION 2008, p. 11). The second major document frames the *Recommendation of the European Parliament and Council on Key Competences for Lifelong Learning* (2006). Focusing on the demands of the knowledge society in terms of flexibility in the labour force, innovation, productivity, and competitiveness this framework comprises a more holistic interpretation of the competence concept as it is stated in the EQF. It states that "Competences are […] a combination of knowledge, skills and attitudes appropriate to the context. Key competences are those which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment" (EUROPEAN PARLIAMENT AND COUNCIL 2006, p. 6). On this basis eight key competences have been distinguished: communication in the mother tongue; communication in foreign languages; mathematical competence and basic competences in science and technology; digital competence; learning to learn; social

and civic competences; sense of initiative and entrepreneurship; and cultural awareness and expression.

Given this list, two main questions arise: First, which competences generally have to be taken into account for spatial citizenship education? Second, how could they be brought together in an appropriate structure in terms of a competence model that serves as foundation for developing a curriculum to support active spatial citizenship skills and competences in the classroom?

3   Identification and Explication of Different Competences in the Field of Spatial Citizenship

Following JEKEL et al. (2010) and GRYL & JEKEL (2012), the basis for spatial citizenship competences are the concepts of the appropriation of space, based on theories of the social construction of space (PAASI 1986, WERLEN 1993, LEFEBVRE 1993, MASSEY 1998), the concepts about geomedia in society, namely critical cartography and critical GIScience (HARLEY 1989, MACEACHREN 2004, SCHUURMAN 2004, PICKLES 2006, CRAMPTON 2009), and the concept of an emancipated citizenship education (BENNETT et al. 2009) that stresses the mature component of reflexive consumption and interest-led production and negotiation. Up to now, spatial citizenship is roughly divided into three complementary fields of competences (GRYL & JEKEL 2012):

a) **Technology/methodology to handle spatial information:** These competences are a precondition for spatial citizenship, but not sufficient. They mainly target the access to (geo-)web2.0 media regarding consumption as well as production competences, such as consuming geomedia, producing geomedia and communicating it to others. However, as the usability of geomedia is increasing remarkably, the basic competences of this field are easily acquired. Some additional, profound, but still lay knowledge combined with awareness of the variety of approaches and platforms may extend the creative leeway and technological maturity within given frameworks.

b) **Reflection/reflexivity regarding geomedia:** This field is aimed at the extension of classical map reading competences with deconstruction and conscious hypothesis construction while using geomedia. Reflection hereby means questioning geomedia. Reflexivity consists of questioning one's own consumption of geomedia and being aware of their role in the construction of spaces, the communication about these constructions and their potential consequences for everyday action.

c) **Communication, participation, and negotiation with spatial representations:** This field based on the ideas of counter mapping supplemented with the possibilities of the web2.0. It includes the ability to express spatial constructions with the production of one's own geomedia, the communication of these ideas to an appropriate auditory, and the negotiation with other agents in an interactive, non-linear process founded on the principles of democracy.

Starting with these ideas, the theoretical foundations are deepened even more by the particular consideration of those aspects that have not been discussed so far. Up to now the theoretical focus aimed at only already existing competence models from related domains and ignored empirical results which now need to be taken into account more in-depth.

These approaches will presumably lead to the re-organization of the previously established competence structure, while preserving the essential character and competences of spatial citizenship as described above. Up to now, no definite pattern has been decided upon. As a working concept we suggest a structure including findings from the following domains as a basis for spatial citizenship:

a) **Geography:** Regarding significant aspects for spatial citizenship, this domain is relatively well-accessed due to theories of the production of space linked to relational concepts of space. However, deeper insights into the concept of spatially enabled action and its societal consequences need to be gained. This field is currently researched by partners within the SPACIT project (FELGENHAUER et al. forthcoming).

b) **GIScience & Technology:** This domain is even less developed within spatial citizenship which is mainly due to the conviction of low technical requirements to access and utilize geomedia on the web2.0. However, aspects such as the wide variety of options to present geomedia and the hidden potential of non-visualized geomedia (FISCHER forthcoming) clearly expand challenges beyond classical critical map reading ideas and make a profound knowledge in GIScience and Technology recommendable as well.

c) **Philosophy:** While the concept of reflexivity is already well-analyzed from different perspectives of epistemology and learning theory (e.g. SCHNEIDER 2010, SIEBERT 1991) and partly linked to competence modeling (RUPP 2009), the aspect of maturity and emancipation still needs further investigation. A linkage to educational theory might be promising, as maturity is one of its main aims, based on the underlying normative system that has emerged from Enlightenment (JAHNK & MEYER 1994).

d) **Politics**: Only a minor part of this domain's potential for spatial citizenship has been accessed yet. Firstly, citizenship education (e.g. ARTHUR et al. 2000) needs to be analyzed more in detail, particularly regarding the question of the development of citizenship competences. Secondly, we need to figure out the ways of implementing prominent terms such as democracy and participation into the concept. Thus, we need to specify normative considerations that underlie society's understanding of assimilation and lobbying, struggle between interests and coexistence. Existing competence models from citizenship education may help (e.g. WEIßENO et al. 2009). We must be aware of the close link of this domain to philosophy, especially when it comes to a normative positioning.

e) **Communication:** This field needs to be considered even more so in order to emphasis the multilayered communication process within geomedia practices and the idea to support argumentation with these practices. Existing competence models give hints (BUDKE et al. 2010). First empirical studies about argumentation with maps will need to be included as well (HENNIG & VOGLER 2011).

Taking the various demands on a spatial citizen into account, the complex theoretical branches of spatial citizenship need to be transferred to a feasible competence model and an accompanying curriculum in order to enable learners to cope with the complexities of a geospatial society. Therefore, a spatial citizenship competence model as a basis for a curriculum for teacher education and training as well as for creating training and course materials requires a further consideration of the outlined concepts.

4   Synthesis

Since curriculum development is based on the definition and assembling of knowledge, skills and abilities which are relevant to different fields of learning, a more detailed definition of 'spatial citizenship competences' has to be provided. This important step is the foundation for all of the subsequent work of competence modelling and curriculum planning. Therefore, the acquirement of a precise competence description is based on a framework of the represented EU educational policy frameworks (ch. 2), the outlined domains (ch. 3) as well as respective pedagogical approaches which are related to spatial citizenship education.

Following GRYL & JEKEL (2012), this definition focuses on the 'spatial citizen' and its appropriation of the spatial domain of social life. Thus, the conceptualization of spatial citizenship competence is grounded in the knowledge, skills, and abilities to enable the individual "to access and make sense of (geo-)information in order to participate in democratic processes and make decisions, taking into account the situations and circumstances she encounters on a daily basis" . In this context 'spatial citizenship education' is concerned with "learning how to navigate everyday life with respect to (a) the physical world, (b) the meanings attached to the physical objects and environment, and (c) the power relations involved in the production of meaning (including GIS instruments to naturalize meaning as well as new forms of collaboration and negotiation of meaning using Web 2.0 applications)" (ibid.).

Identifying the underlying dimensions of the theoretical construct of spatial citizenship competence leads to the question which domains are related to the spatial citizenship approach. Of course, this discussion has to be connected by extension to the goals as well as dimensions of citizenship education itself. Focusing on the more emancipatory approach to spatial citizenship education, this education then is more specifically directed to the individuals' capabilities of participation in terms of "a mature appreciation of space and its social construction under the conditions of a geo-media society" (GRYL & JEKEL 2012, p. 10). As briefly outlined in chapter 3, five different domains are clearly identified which seem to be most relevant in this context: geography, politics, philosophy, communication, and GIScience & Technology. Here, the task will be primarily on the extraction of relevant domain-specific components of competences on the basis of a state of the art review. In addition, the identification of generic competences, has not yet progressed very far. Consequently, it will t be necessary to discuss the existing approaches and areas of key competences (e.g. lifelong learning; ICT-literacy; 21st century skills) which could be productive to the spatial citizenship concept.

The competences defined will then have to be integrated into a model of competence structure to "describe the web of requirements" which learners are expected to master (cf. KLIEME 2004, p. 66). Therefore, the three suggested competence dimensions (see ch. 3), which form the basis for the ability and capability to participate in the terms of spatial citizenship (cf. GRYL & JEKEL 2012), will serve as an reliable backbone for the definition of the major competence dimension in order to establish: a) a relationship between competences in various domains; b) an internal structure of individual competence dimensions, and a description of the relationships of sub-competences (specific knowledge and skills); and c) areas and contexts of situational requirements (different knowledge, skills and abilities) (cf. KLIEME, MAAG-MERKI & HARTIG 2007).

Finally, since particularly the aspects of context-specificity and learnability of competences are key features in the current competence debate in educational research (cf. KLIEME & HARTIG 2007; KOEPPEN et al. 2008) for the development of a competence model, two tasks remain. First, the *context*-specific definition of knowledge, skills and abilities. This means the description of possible areas of (specific) situations and requirements, in which spatial citizenship competences can occur or are required. Second, due to the aspect of learnability of competences the question of situational aspects arises. Situational aspects are of great importance since they are especially necessary for the exemplary operationalisation of the competence model which will take place in the form of the expected curriculum and the establishing of a constructivist learning environment..

5   Conclusion

The spatial citizen approach deals with the implementation of an idea of education, resulting from the current developments within the geo-ICT and web2.0 in conjunction with the changing demands on individual's active participation and communication by democratic means. Consequently, spatial citizenship education is justified in spatio-temporal challenges of the geomedia society. However, this approach does not focus on ICT alone. Instead it connects citizenship education with a mature and critical appreciation of space.

Based on the argument that spatial citizenship is a case for a curriculum, we have presented vital aspects of the development of both a competence structure model and a curriculum for teacher education and training on spatial citizenship. Since within the international competence discourse, a shift from measuring cognitive abilities to measuring complex and multidimensional competence constructs related to real-world contexts takes place, the competence model we propose has to combine various domain-specific as well as generic skills and abilities connected to (spatial) citizenship education. However, this competence model won't be established to function as a basis for the empirical assessment and measurement of cognitive skills in this area – in terms of the acquisition of productivity of education. On the contrary: a spatial citizenship competence model will help us to conceptualize a normative and theoretically justified capability to act autonomously and responsibly in social contexts and to be an emancipated subject. For future research the challenge will be on both the modeling and the operationalisation of such a comprehensive 'web of competences' for developing teaching and learning for spatial citizenship across Europe.

References

ARROWSMITH, C., BAGOLY-SIMÓ, P. FINCHUM, A., ODA, K. & PAWSON, E. (2011), Student Employability and its Implications for Geography Curricula and Learning Practices. Journal of Geography in Higher Education, 35 (3), 365-377.

ARTHUR, J., DAVISON, J. & STOW, W. (2000), Social literary, citizenship eudcation, and the national curriculum. London.

BENNETT, W. L., WELLS, C. & RANK, A. (2009), Young citizens and civic learning. Citizenship Studies, 13 (2), 105-120.

BUDKE, A., SCHIEFELE, U. & UHLENWINKEL, A. (2010), „I think it's stupid" is no argument. Some insights on how students argue in writing. Teaching Geography 2/2010, 66-69.

CRAMPTON, J. W. (2009), Cartography: Maps 2.0. Progress in Human Geography, 33 (2), 99-100.

DELEMARE LE DEIST, F. & WINTERTON, J. (2005), What is Competence. Human Resource Development International, 8,1, 27-46.

DICKINSON, J., ANDRUCKI, M. J., RAWLINS, E., HALE, D., COOK, V. (2008), Geographies of everyday citizenship. ACME: An International E-Journal for Critical Geographies, 7 (2), 100-112.

ENNIS, M. R. (2008), Competency Models: A Review of the Literature and The Role of the Employment and Training Administration (ETA). Pilots and Demonstration Team Division of Research and Evaluation Office of Policy Development and Research Employment and Training Administration, U. S. Department of Labor. http://www.careeronestop.org/competencymodel/info_documents/ OPDRLiteratureReview.pdf (accessed 03-2012).

EUROPEAN COMMISSION (2008) The European Qualifications Framework for Lifelong Learning (EQF). (Luxembourg: Office for Official Publications of the European Communities). http://ec.europa.eu/education/lifelong-learning-policy/doc/eqf/ brochexp_en.pdf (accessed 11-2011).

THE EUROPEAN PARLIAMENT AND THE EUROPEAN COUNCIL (2006), Recommendation of the European Parliament and Council on Key Competences for Lifelong Learning. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010: 0018:en:PDF (accessed 03-2012).

FELGENHAUER et al. (forthcoming).

FISCHER, F. (forthcoming), Social navigation in urban public space.

GRYL, I. & JEKEL, T. (2012, in print), Re-centering GI in secondary education: Towards a spatial citizenship approach. Cartographica 47 (1), 18-28.

HARLEY, J. B. (1989), Deconstructing the map. Cartographica, 2/1989, 1-20.

HARTIG, J. (2006), Kompetenzen als Ergebnisse von Bildungsprozessen. DIPF informiert, 2/2006, 2-7.

HARTIG, J. & KLIEME, E. (2006), Kompetenz und Kompetenzdiagnostik. In: SCHWEIZER, K. (Eds.), Leistung und Leistungsdiagnostik. Berlin, 127-143.

HENNIG, S. & VOGLER, R. (2011), Participatory tool development for participatory spatial planning. The GEOKOM-PEP environment. In: JEKEL, T., KOLLER, A., DONERT, K. & VOGLER, R. (Eds.), Learning with GI 2011. Berlin/Offenbach, 79-88.

JANK, W. & MAYER, H. (1994), Didaktische Modelle. Frankfurt a. M.

JEKEL, T., GRYL, I., DONERT, K. (2010), Beiträge von Geoinformation zu einer mündigen Raumaneignung. Geographie und Schule, 32 (186), 39-45.

KLIEME, E. et al. (2004), The Development of National Educational Standards: An Expertise. Published by The Federal Ministry of Education and Research (BMBF) 2004.

KLIEME, E. & HARTIG, J. (2007), Kompetenzkonzepte in den Sozialwissenschaften und im erziehungswissenschaftlichen Diskurs. Zeitschrift für Erziehungswissenschaften, 10/2007, 11-29.

KLIEME, E., MAAG-MERKI, K. & HARTIG, J. (2007), Kompetenzbegriff und Bedeutung von Kompetenz im Bildungswesen. In: HARTIG, J. & KLIEME, E. (2007) (Eds), Möglichkeiten und Voraussetzungentechnologiebasierter Kompetenzdiagnostik. Bildungsforschung Band 20, Bundesministerium für Bildung und Forschung (BMBF). Bonn/Berlin, 5-16.

KOEPPEN, K., HARTIG, J., KLIEME, E. & LEUTNER, D. (2008), Current Issues in Competence. Modeling and Assessment. Journal of Psychology, 216 (2), 61-73.

KRAUTZ, J. (2009), Ware Bildung. Schule und Universität unter dem Diktat der Ökonomie. München.

LEFEBVRE, H. (1993), The Production of Space. Oxford.

MACEACHREN, A. M. (2004), How maps work. New York.

MASSEY, D. (1998), Power geometries and the politics of space-time. Heidelberg.

PAASI, A. (1986), The institutionalization of regions. Fennia, 1/1986, 105-146.

PICKLES, J. (2006), Ground Truth 1995-2005. Transactions in GIS, 10 (5), 763-772.

PEDRO, N., MATOS, J. F., PEDRO, A. & ABRANTES, P. (2011), Teacher skills and competence development for classrooms of the future. iTEC Deliverable 4.1. Teachers Competence. http://itec.eun.org/web/guest/results (accessed 03-2012).

RUPP, G. (2009), Zur Modellierung und zum Aufbau von Reflexionskompetenz. In: ROHBECK, J. (Hrsg.), Jahrbuch für Didaktik der Philosophie und Ethik. Dresden.

SCHNEIDER, A. (2010), Der zweite Blick in einer reflexiven Geographie und Didaktik. Jena.

SCHUURMAN, N. (2004), GIS. A short introduction. Oxford.

SIEBERT, H. (1991), Aspekte einer reflexiven Didaktik. In: MADER, W. et al. (Hrsg.), Zehn Jahre Erwachsenenbildungswissenschaft. Bad Heilbrunn, 19-32.

STRACKE, C. (2011), Competence Modelling, Competence Models and Competence Development – An Overview. In: STRACKE, C. (Ed.), Competence modelling for vocational education and training: innovations for learning and development; WACOM, Water Competences Model Transfer. Shaker, Aachen.

TEN DAM, G. & VOLMAN, M. (2004), Critical thinking as a citizenship competence:teaching strategies. Learning and Instruction, 14, 359-379

THIEM, C. H. (2009), Thinking trough education: the geographies of contemporary educational restructuring. Progress in Human Geography, 33 (2), 154-173.

U.S. DEPARTMENT OF LABOR, EMPLOYMENT AND TRAINING ADMINISTRATION (DoLETA), (2012), CareerOneStop. Competency model clearinghouse. U.S. Department of Labor. http://www.careeronestop.org/competencymodel/default.aspx (accessed 02-2012).

WHALLEY, W. B., SAUNDERS, A., LEWIS, R.A., BUENEMANN, M. & SUTTON, P. C. (2011), Curriculum Development: Producing Geographers for the 21st Century. Journal of Geography in Higher Education, 35 (3), 379-393 .

WEIßENO, G., DETJEN, J., JUCHLER, I., MASSING, P. & RICHTER, D. (2009), Konzepte der Politik. Ein Kompetenzmodell. Schwalbach.

WERLEN, B. (1993), Society, action, and space. London.

WINTERTON. J., DELAMARE LE DEIST, F. & STRINGFELLOW, E. (2006), Typology of knowledge, skills and competences: clarification of the concept and prototype, Cedefop Reference series, 64. (Luxembourg: Office for Official Publications of the European Communities).