

Competence: What Do We Need to Read and Think About?

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Purpose and Background

The recent rediscovery and expansion of competency-based higher education has been largely bereft of attempts to define or at least articulate the nature of the beast called “competence,” and it would help our presentations and shaping of these programs to review the various strains of serious approaches to taming the beast over the past 50 years. The purpose of this brief paper is to do just that, to stimulate current practitioners to engage in reading notable literature that illuminates deep assumptions about the nature of “competence,” and to reflect on what lies underneath their structures, processes, and delivery systems. Otherwise, “competence” will continue to function as a default white noise, a term everyone utters mechanically, then passes by.

As a preview of coming attractions, we’re asking where this default term emerged, and will be highlighting (a) the training literature and a variety of workplace-driven configurations of competence, (b) the theory of language acquisition set forth by Chomsky (1965) as the Ur-home, so to speak, of competence, and the reactions to that theory taking “competence” based in language into the wider direction of the “communicative,” and © the consequences of domain/context specific and general learning objectives for the conception of competence. Will this essay then provide a definition of “competence”? No, but it should move the reader toward reading and reflection on a territory that cries out for more of it.

Not surprisingly, we find a considerable gap between the rhetoric, references, usages, and concerns of public and educational policy talk and those of serious research and reflection. On the latter score, we should pay tribute to OECD for initiating and carrying out the DeSeCo (Design and Selection of Competencies) at the turn of the 21st century (starting in 1997 and concluding in 2001). OECD recognized that business and employer inputs and objectives defined a limited world of competence, and that civic participation, social cohesion, and human autonomy were just—if not even more—important objectives of education based (if it could be) on mastery of learning challenges. OECD was very frank in its own objectives of advancing understanding of what competency means, “encouraging an iterative process between theoretical and empirical work,” and feeding education policy (perhaps more successfully in some contexts than others). The US education policy environment did not benefit much from this: my reading in this environment did not uncover one reference any DeSeCo product, and, perhaps as a consequence, we continue to talk and model *around* the key questions DeSeCo addressed. Process, form, program building, federal and state regulations, networking, practiced-based challenges, —anything but the content of “competence.” In contrast, this paper has drawn heavily on the work of the scholars assembled by OECD to address the territory, and will highlight that of Weinert (2001) in particular.

Definitions and Their Discontents

Virtually every commentator rushes out to tell us how confusing the notion of competence, and how great “a host of conceptual misunderstandings” (Azemikhah, 2006) accompanies it, or how much “a nebulous concept” it is (Stump, Ratliff, Wu, and Hawley 2009). At the same time, ordinary language simply mouths the term as if everyone knows what it means, and, when

pressed, produce what Beneitone and Bartolomé justly label “tautological definition[s]” (2014, p. 305). From their position as masters of the Tuning project (Project ALFA) in Latin America, “competence” becomes an empty default assumption without borders. In ironic harmony from the world of English language abstraction in which such discourse exists, we find definitions in terms of

- models of cognitive operations;
- a skill or conceptual understanding;
- problem-based learning of any kind;
- achieved capacity;
- a preferred set of assets that results from learning;
- intentional cognitive pre-requisites for learning;
- a quality of the learner;
- skillful understanding;
- abilities and aptitudes¹;
- knowledge times experience times power of judgment²;
- rule-based knowledge grounded in a combination of language and cognition³;

With the exception of Chomsky’s definition (see below), it is no wonder that the term and its function as a node disappears into the fog.

Yet business, industry, and public organizations have not allowed us to avoid confronting the core meanings of competence. From one perspective, they started it all in their training programs.

Training and “Conscious Competence”

The individual is at the core of training programs informed by the “conscious competence” model. What does that mean? It is a sequence in four (and sometimes five) acts:

Reflection

Object

1. Unconscious Incompetence

The individual is simply not aware that he or she cannot do X.

Whatever X might mean.
The individual has never encountered X.

¹Two terms that this writer this writer regards as dangerous, red-flag words from the era of discriminatory IQ testing and its commentaries (Adelman, 2014; also Carson 2001)

²German advisory committee report, cited by Weinert, 2001 p. 45)

³Chomsky’s definition, a by-product in *Aspects of the Theory of Syntax*, and widely cited in subsequent literature on the nature and theory of competence.

2. Conscious Incompetence

The individual is aware that he or she cannot do X. The individual knows what X is.

3. Conscious Competence

The individual attempts to do X. Whatever X might mean.

4. Unconscious Competence

The individual succeeds in doing X so many times that X becomes ingrained, routine, and almost mindless. Whatever X might mean.

In a 5th stage, Reflective Meta-Competence, that is sometimes included in this model, the individual understands reflectively each of the four stages through which he/she has passed, and can describe how the competence was acquired/learned and how it might be improved.

When it's routine, this story-line goes, though Step 4, you're competent in X. But it's obvious that what becomes routine changes in the course of the life-span, let alone within each application territory. The focus of this formulation is a very private notion of competence, i.e. the interaction exists between an individual and a task, and is allied to subjective competence theory (see Sternberg and Kolligian Jr., 1990). In that case, the more a student is a self-disciplined, autonomous, and motivated learner, the more likely tasks can be mastered without formal education structures and personnel.

Gordon Training International assumed a major role in promulgation of the conscious competence model 40 years ago. Agents such as Gordon, in concert with employers, wrote the book on what it took for both prospective and current employees to reach a stage in the execution of a common task so that it was ingrained and automatic. Competence, in its original applications in the world of learning, focused first on psychomotor tasks, and later, cognitive tasks. And when it came to cognitive tasks, these were defined by "workforce needs," something that can change in 3-year cycles or faster, and something defined by panels of putative experts who may or may not include CEOs, HRD professionals, and front-line vice-presidents and managers of divisions. The assumption of these various employer perspectives seems to be that students can market themselves more convincingly on the basis of something called "competencies."

If it isn't a generalized workforce that drives toward definitions of competencies, it is a specific job in a specific occupation with specific tasks calling for specific skills and/or knowledge and/or dispositions. The closer this configuration lies to an individual's current position and work experience, the more incremental the learning, in part because the territory of competencies is familiar. The familiar context tends to be less the case in higher education settings that are not directly shaped by the minutiae of occupational task requirements. Discrete skills are not competencies. A competence statement moves to a higher level of abstraction, one that integrates sometimes putatively unrelated skills. In both training and higher education, one

otherwise encounters islands of modules. One is not likely to get what we think of as a “higher education” from such disconnected pieces.

The role of employing organizations of all kinds in these sequences can be said to be that of “communities of practice” (Lee and Wenger 1991). We find such communities principally by industry (e.g. professional health care) or occupation (e.g. nursing), that value and promote some more generalized task-masteries more than others. Context counts, too—and centrally, in the nature of technical work (Whalley and Barley, 1997). These communities of practice have become the reference points for what academics call “professional competencies,” i.e. what it takes for current students to function later in those industry/occupation communities. They are not what Warren (1978) called “academic competencies,” the core of what we normally think of as “higher education.”

Consequences of Employer-Driven Models of Competence

Virtually all contemporary designs and presentations of competency-based postsecondary education reference one or more of the employer-defined reference points, so these are not to be casually disregarded. Too, the programs we witness in the U.S. are designed principally for older students, hence serve partly as a route for rationalizing some of higher education’s more weighty challenges, e.g. the changing demographics of beginning or returning students, with competence being a more comprehensible structure for adults, who are far less interested in growing up (they have already grown up) and more interested in finding routes to credentials—and jobs, hence serving the interests of employers. All that, in turn, serves the drive to award more credentials, a key objective for public policy makers.

The employer-driven competency route is also cheaper than traditional delivery in higher education and less economically burdensome for students, another rationalizing factor, something underscored as long as a quarter-century ago (Green 1989) as a by-product of the natural uses of technologies in information transfer and autonomous learning modes. Turn faculty into coaches and graders and you need less of them and can pay them less. When the student is placed in a position of being responsible for developing skills outside of traditional classroom and traditional peer interaction settings, one doesn’t need elaborate facilities, either. The politicians love all of this, of course. You can sell CBE at lower tuition levels, whereas you need subsidies for traditional brick-and-mortar/classroom model learning, whether through state funds, endowments, or annual fund raising from private sources. You’ve got low-cost/high revenue distribution. And it is cheaper in the corporate/organizational training world as well: no transportation costs to bring dispersed trainees together, no postage, no space costs. In the competency-based-education movement in the U.S., postsecondary education takes its cues from the industry/occupation universe.

The employer perspective role in identifying competencies raises a normative issue throughout competency-based learning, i.e. who defines the model of mastery? who empowers those individuals to write the markers? who distinguishes the level at which individuals *should* perform tasks and describes the level at which individuals *do* perform tasks? Does this normative question with respect to psychomotor or cognitive competence apply to other areas to which the word, “competence,” has been applied, e.g. interpersonal competence, communicative competence, health competence? Or, as OECD asked (and I am expanding on the question, but in the spirit in which it was asked) in its background paper for the DeSeCo

project, how would the “perspectives of an economist, a sociologist, a philosopher, an anthropologist, a psychologist or an expert in educational research” (OECD 2001, p. 5) either select or contribute to the definition of competencies, and key competencies independent of contexts such as stages of life, gender, etc. This normative tension the literature rarely—if ever—addresses, but is one which contemporary advocates should consider. It is an important aspect of the search to define “competence” that the employers who drive competence selection do not consider, either.

And now, for the Heavy Duty Work: Just What Is “Competence,” Anyway?

In psychomotor, cognitive, and affective environments, we all do things with words, hence language becomes a core in the demonstration of an underlying mastery of any task in those domains, conditioned by both field-specific and social contexts. Meaning and understood meaning are thus critical pins in the presentation of anything we call “competence,” a fact that is often overlooked in our daily use of the term. Chomsky (1965) started off this path toward defining competence, arguing that language is a cognitive phenomenon with innate rules that any child masters in understanding and speaking a native tongue, the natural execution and application of which constitutes competence. This “cognitive view of language” plays a central role in competence theory, even if there are non-cognitive activities (e.g. scenarios, frames) accompanying the use of language (Newby 2011). Too, language has both purpose and outcome, thus dovetailing with the process of validating whatever it is that we call “competence.” Still, none of this defines the “it.” One should note, and not in passing, that Chomsky’s view of language acquisition and performance as a closed competence system generated constructive dissent, building out to a broader sociolinguistic notion of “communicative competence” (e.g. Habermas, 1970; Hymes, 1972, who argued that confining language to individual cognition did not sufficiently account for other communicative phenomena and ethnographic contexts.

In probably the most thorough review of the territory, Weinert (2001) moves us further toward grasping what “competence” might mean by summarizing theories of

- general cognitive competencies, heavily psychometric, context-free, and, with Piagetian influences, and developmental in nature;
- specialized cognitive competencies, where context counts, and where we find “clusters of prerequisites that must be available for an individual to perform well in a particular content area” (p. 47). In a way this area overlaps the highest level of the individual consciousness training model in that such competencies involve routines, but routines that are controlled by a high degree of self-reflection;
- the “competence-performance model,” or, perhaps better, the “competence versus performance” model that derives from Chomsky’s focus on and explication of the process of language acquisition and, subsequently, the uses of the native language by individuals (performance). Obviously, the performance dimension of these considerations depends a great deal on individual experience, situation, and culture. Hence, as previously noted, the literature has seen expansion of Chomsky into broader communicative competencies, social competencies, and even emotional

competencies, the latter of which one does not observe in training or higher education discourse on the topic.

Perhaps the most relevant to higher education of the theoretical competence models Weinert covers is “action competence,” principally on the grounds of inclusiveness. As he writes, “action competence comprehensively combines those intellectual abilities, content-specific knowledge, cognitive skills, domain-specific strategies, routines and subroutines, motivational tendencies, volitional control systems, personal value orientations, and social behaviors into a complex system [that] specifies the prerequisites required to fulfill the demands of [X].” (p. 51). Setting aside some of the language here (e.g. “abilities”), this is not the way the higher education world normally consider competencies, but might be a good place to begin, then sort out what institutions of higher education can reasonably address in moving students to achieve specified learning outcomes. I would translate “the prerequisites required to fulfill the demands of” to “the discrete actions required to demonstrate fulfillment of a learning objective,” for example (Adelman 2014, p. 361) preparing, delineating, explicating, formatting, combining, etc. All of these actions are applied to something. What, in turn, does that mean?

Application territories refer to contexts in which human action subject to judgments of proficiency or mastery takes place. These are primarily cognitive, psycho-motor, interactive, and rely on specific knowledge frames. We thus have economic competencies, musical/performance competencies, communicative competencies, competencies in manipulating sports equipment, competencies in different kinds of writing, human language competencies, algorithmic competencies, negotiating competencies, woodworking competencies, social competencies, etc. They are, in the language of researchers, domain-specific. In some of these, behaviors and products of individuals are fairly stable and describable, but that is not true in all cases. Many of them change over time. And they are not all harmonious, i.e. demonstrable achievement in one does not necessarily translate to achievement in another. But the contexts—the economic, the musical, the communicative, etc.—still don’t tell us precisely what is being reshaped by context.

A combinatory approach lies in the notion of competence as a domain/context specific acquired disposition that individuals draw upon to confront context-specific tasks and challenges. The disposition is one way of labeling the motivation to act that Weinert (2001) sees in all competencies, and action itself requires different types of what Weinert calls “social skills,” also a part of competence, and one in keeping with the key role of language as articulated by Chomsky and its expansion in the communicative competencies of Hymes.

Thus, one might posit that a competence is the willful execution of a set of related but discrete cognitive skills (e.g. translating, outlining, interpreting, illustrating) nested in a more generalized frame (e.g. explication), informed by knowledge derived from discipline/field context (e.g. characteristics of organic molecules or harmonic and en-harmonic tonal relationships), and expressed in a product accessible to others through language (and, where applicable, other representational media).

Is that what one means by “competence”? I am not sure, but it is the type of action-oriented combinatory statement that Weinert, representing the DeSeCo undertaking, might endorse.

Can We Move Away from the Contextual Frame?

What some would call “general competencies” are related to the configurations suggested above, but without discrete context. Rather, they are the configuration of underlying cognitive operations that are prerequisites to addressing and mastering more specific tasks. They are what individuals call on and instinctively assemble in the course of learning anything. Herein lies the attraction of generic competencies for educators and trainers: whatever they are, they are learned, hence most likely acquired in school and work settings. Whatever they are, they are necessary for solving problems, confronting new tasks, adjusting to unfamiliar conditions—all of which play out in life. But at the same time, they require specific knowledges and skills, and cannot be observed independent of these conditions, though that is often the way to which they are referred by educators and legislators. “Critical thinking” is a prime case. First, it has competency components which make a lot more sense than the white noise of the phrase; second, because those components—and their sum—cannot be demonstrated by anyone absent context, knowledge, and skill.

In this generic world, the metaphor of a camera lens setting on the object of concern is worth raising. That is, first, are attitudes, orientations, or behaviors such as teamwork, global perspective, ethical standards, civic participation, lifelong learning, and cultural sensitivity something we can call “competencies,” or are they more likely personal attributes? This is a collection of wide-angle lens opening settings. Then, are what we call generic academic behaviors such as analysis, problem-solving, evaluation, creativity, etc. mid-level settings of the competency lens? Weinert goes deeper to the level of what he calls “mental functions,” e.g. memory, which, though part of the prerequisites for the demonstration of particular competencies, are not learned (p. 9) and probably off-camera. And when the student is holding the camera, are these generic academic behaviors perceived if the student experiences the certification/validation of competence in a discontinuous set of one-time events such as building a spreadsheet and executing basic spreadsheet calculations correctly or is the “it” of competencies more developmental and continuing? If the latter, as Schneider (2014) stresses, educators and trainers need curricula, not courses, modules, or on-line instructional moments.

Lastly, the relation of competence to assessment, formative judgments, summative proficiencies

The core of what makes a competency-based education program, it is held by advocates, is a demonstration: unrestricted response exam, paper assignment, simulated laboratory, live computer-based problem-solving, field reports, exhibit, other assignments and assessments. Successful execution reportedly demonstrates an underlying something, though it is rarely said exactly what—other than “competence”—or a competence in very generalized cognitive processes such as “critical thinking,” “problem-solving,” “observational accuracy,” or “understanding.” And successful execution, marked in whatever form of record-keeping or check-list an institution establishes, replaces time-based credits. Fine, but I urge observers to read the assignments—or “prompts”—offered by competency-based programs as examples of their assessments and articulate the competency/competencies that are the logical prior links, i.e. the “that” which is truly being assessed. In too many cases, we are left with blank faces. In U.S. competency-based education programs, this process is called “direct assessment” (Klein-Collins 2013), i.e. the student moved toward degree qualification through a series of these

assignments/assessments, whether credits⁴ are part of the mix or not. Presumably, the student elects to assume an assignment or examination whenever the student chooses or within a specified period in which a particular subject is addressed. All that is just fine, except it still leaves the identity of “competence” open-ended. It is not a matter of ostensive definition. One cannot simply point to an assessment and say, “See! That is the competence!” Nor, as Sadler (2013) points out, can one simply refer to “graduate attributes” as references, since these are not assessed, and if they were sampled, would be confounded by time and measurement problems⁵.

This fulcrum of demonstration precludes the reference of competence to “ability.” As Shavelson (2013) reminds us, the inference of competence requires “observable performance,” does not rely on the unseen, and one cannot write an assessment prompt for unseen “ability.” On the other hand, one can write prompts for assignments that call on students to “identify,” “categorize,” “differentiate,” “design,” etc. and combinations of these—with the combinations more valid and measurable vehicles⁶. And degrees of success in responding to those prompts can range from the formative to the summative, a position taken by *The Degree Qualifications Profile*, which uses the summative label of “proficiency,” as opposed to the intermediate, formative “competency” (Adelman, Ewell, Gaston, and Schneider 2014). After all, the *DQP* is focused on the qualifying moment for the award of a credential. And the *DQP* goes further in providing examples of assignments directly linked to the proficiencies it articulates, inviting faculty to contribute other examples of prompts that elicit student behaviors that demonstrate that qualifying moment proficiency, along with the logic that extends from the statement of proficiency to the cradle of performance in which it is judged. However, the *DQP* departs from the DeSeCo project’s recommendations for judging the *how well?* of specific competencies (or, in the *DQP* case, proficiencies) because its focus is on faculty roles (and judgment is a faculty prerogative), not system or national comparisons. There is a lot more to say, but in the context of this brief review, we will leave it at that.

What Do We Have at the End of the Day

Not a definition of “competence,” in part because that is not what this paper set out to do. Rather, first, a set of components and questions to ponder:

- language at the center of all “competencies,” including psychomotor, and, in the case of the latter, if one elects the “conscious competence” stance, until the psychomotor becomes routine without reflection;

⁴While the European approach to learning outcomes, as reflected in the Tuning project, valiantly tries to tie credits to competence (Wagenaar 2014), US competency-based programs, live uneasily, at best, with credit systems.

⁵In this respect, one must grant that the OECD DeSeCo project, partially stimulated by existing transnational assessment instruments such as PISA and Adult Literacy and Lifeskills, recommended the establishment of more and better assessment for adult populations (OECD 2002). No doubt these would cover “graduate attributes.”

⁶The author of this paper obviously disagrees with Rychen and Salganik’s conclusion from their DeSeCo work to define “a competence” as “the *ability* [italics mine] to meet a complex demand successfully or carry out a complex activity or task” (2002). His position is elaborated in Adelman, 2014, pp. 346-349.

- acknowledgment that competence is a multifaceted configuration, not a solitary reference point (Rychen and Salganik 2003);
- recognition that what lies within the bounds of both education and training programs largely excludes non-controllable and non-assessable aspects of emotion and personality (and that includes personal development) that some include under the “competence” umbrella;
- whether we favor the approach or not, admit that the employer-driven models of competence have come to serve as focal points for higher education competency-based education programs as well as traditional training;
- the necessity of confronting normative questions about who defines and articulates competencies and from whence these agents derive their authority;
- the judgment of competence in any type of activity must be not only observable, but logically convincing, hence prompts for demonstration must flow directly from a clear statement of a configuration of mental/motor/affective characteristics, either conditioned by context or generic;
- one does not find the execution of any competence without motivation to do so; intentionality is the fulcrum of action that renders knowledge, skills, and their combination observable and subject to judgment;
- to allow discussions and presentations of competency-based education to be dominated by federal rule-making and financial aid policy, calendars and staffing, and accounting metrics, for example, misses the core of the learning enterprise, no matter how important these considerations may be for the execution of learning programs based on an ambiguous “it.”

I hope this is a constructive beginning for deeper and more nuanced reflection. A bibliography is also provided. It is not comprehensive, but contains enough touchstones to help smart people think smarter.

Competence Issues Bibliography

- Adelman, C. 2014. "Use and problems in the language of discipline-based qualification statements: learning from Tuning and its analogues." *Tuning Journal for Higher Education*, vol. 1, no. 2, pp. 335-368.
- Adelman, C. 2013. "Higher Ed Discovers Competency, again: an Essay." *Inside Higher Ed* (online). June 6, 2013.
- Adelman, C., Ewell, P. Gaston, P., and Schneider, C.G. 2014. *The Degree Qualifications Profile*. Indianapolis, IN: the Lumina Foundation for Education.
- Azemikhah, H. 2006. "The 21st Century, the Competency Era and Competency Theory." AVETRA, New South Wales, AU.
- Beneitone, P. and Bartolomé, E. 2014. "Global generic competences with local ownership: a comparative study from the perspective of graduates in four world regions." *Tuning Journal for Higher Education*, vol. 1, no. 2, pp. 303-334.
- Carson, J. C. 2001. "Defining and Selecting Competencies: Historical Reflections on the Case of IQ." In Rychen, D.S. and Salganik, L.H. (eds.), *Defining and Selecting Key Competencies: Theoretical and Conceptual Foundations*. Seattle, WA: Hogrefe and Huber, pp. 33-44.
- Chomsky, N. 1965. *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.
- Gelman, R and Greeno, J.G. 1989. "On the Nature of Competence; Principles for Understanding in a Domain." In Resnick, L.B. (ed.) *Knowing, Learning, and Instruction*. Hillsdale, NJ: Erlbaum, pp. 125-186.
- Green, K.C. 1989. "High Tech vs. High Touch" the Potential Promise and Probable Limits of Technology-Based Education and Training on Campuses." In Stacey, N.G. (ed), *Competence Without Credentials*. Washington, DC: U.S. Department of Education, pp. 29-50.
- Habermas, J. 1970. "Toward a Theory of Communicative Competence." *Inquiry*, vol. 13, no. 1, pp. 360-375.
- Hymes, D. 1972. "On Communicative Competence." In Pride, J.B. and Holmes, J. (eds.), *Sociolinguistics: Selected Readings*. Hammondsworth, UK: Penguin, pp. 269-293.
- Klein-Collins, R. 2013. *Sharpening Our Focus on Learning: the Rise of Competency-Based Approaches to Degree Completion*. Bloomington, IN: National Institute for Learning Outcomes Assessment, Occasional paper #20.
- Lave, J and Wenger, E. 1991. *Situated Learning: Legitimate Peripheral Participation*. New York: Cambridge University Press.

Mansfield, B. 2004. "Competence in Transition." *Journal of European Industrial Training*, vol. 28, pp. 296-309.

Newby, D. 2011. "Competence and performance in learning and teaching: theory and practices."
Paper presented at the 19th International Symposium on Applied Linguistics, Thessalonika, GR, 2009.

Organization for Economic Cooperative Development (OECD), 2001. *Definition and Selection of Competencies: Theoretical and Conceptual Foundations (DeSeCo): Background Paper*. Paris, FR: Author.

Organization for Economic Cooperative Development (OECD), 2002. "Recommendations to the OECD Education Committee, the Employment, Labour and Social Affairs Committee and the Governing Board of CERI from the DeSeCo Steering Group." Paris, FR: Author.

Rychen, D.S. and Salganik, L.H. 2003. "A Holistic Model of Competence." In Rychen, D.S. and Salganik, L.H. (eds.) *Key Competencies for a Successful Life and a Well-Functioning Society*, Gottingen: Hogrefe & Huber, pp. 41-62.

Sadler, D.R. 2013. "Making Competent Judgments of Competence." In Sigrid Blömeke *et al.* (eds.) *Modeling and Measuring Competencies in Higher Education: Tasks and Challenges*. Rotterdam, NL: Sense Publishers, pp. 13-28.

Schneider, C. G. 2013. "Holding Courses Accountable for Competencies Central to the Degree."
Liberal Education, vol. 99, no. 1, pp. 14-21.

Shavelson, R.J. 2013. "An Approach to Testing and Measuring Competence." In Sigrid Blömeke *et al.* (eds.) *Modeling and Measuring Competencies in Higher Education: Tasks and Challenges*. Rotterdam, NL: Sense Publishers, pp. 29-43.

Sternberg, R.J. and Killigian, J. Jr. 1990. *Competence Considered*. New Have, CT: Yale University Press.

Stump, K.N., Ratliff, J.M., Wu, Y. P., and Hawley, P.H. 2009. "Theories of Social Competence from the Top-Down to the Bottom-Up." In Matson, J.L. (ed), *Social Behavior and Skills in Children*. Springer Science+Business Media, pp. 23-37.

Wagenaar, R. 2014. "Competences and learning outcomes: a panacea for understanding the (new) role of Higher Education?" *Tuning Journal for Higher Education*, vol. 1, no. 2, pp. 279-302.

Warren, J. R. 1978. *The Measurement of Academic Competence*. Final report to the Fund for the Improvement of Postsecondary Education, Grant # G007603526.

Weinert, F.E. 2001. "Concept of Competence: a Conceptual Clarification." In Rychen, D.S. and Salganik, L. H. (eds.) *Defining and Selecting Key Competencies*. Seattle: Hogrefe & Huber Publishers, .pp. 45-65.

Whalley, P and Barley, S.R. 1997. "Technical Work in the Division of Labor: Stalking the Wily Anomaly." In Barley, S.R. and Orr, J.E. (eds). 1997. *Between Craft and Science: Technical Work in U.S. Settings*. Ithaca, NY: Cornell University Press, pp.23-52.