ACADEMIA
ISSN, 2241-1402
http://hepnet.upatras.gr

Number 18, 2020

Academia A publication of the Higher Education Policy Network

Bridging conceptually academic and occupational learning and credentialing in US postsecondary education. Current developments and research insights on challenges, approaches, and perspectives

Volker Rein[1]
BIBB

Abstract
In the US as in other countries, a debate drives shaping programmes and credentials in all education and training sectors along competencies. The objective is to promote lifelong learning, the quality and the transferability of learning achievements sustainably between the education pathways to better address the needs of the learners, the society and the labour markets. The increasingly knowledge-based requirements in manufacturing and service areas in particular call for appropriate conceptual adaptations in programme shaping within academic education and across the sectors of postsecondary education.
This chapter assumes a potential compatible practice orientation in academic education and beyond for an acquisition of complete competency to apply appropriate knowledge, skills and competencies to solve complex problems and tasks. It first approaches the topic in the context of relevant developments in US postsecondary education at the system and policy level and at the instrumental and qualification conceptual level. Then it discusses research generated empirical insights on appropriate conceptual competency oriented developments within Associate degree programmes, as well as on relevant linkages to non-degree and Bachelor programmes. Finally, essential conceptual and practical implications are considered for academic and occupational learning and credentialing in US postsecondary education and training and beyond.

Key words
US postsecondary education, academic and occupational learning, competency, connectivity, permeability.

Περίληψη
Στις ΗΠΑ, όπως και σε άλλες χώρες, λαμβάνει χώρα μια συζήτηση που ωθεί στον σχεδιασμό προγραμμάτων και πιστοποιητικών σε όλους τους τομείς της εκπαίδευσης και κατάρτισης με βάση τις ικανότητες. Ο στόχος είναι η προώθηση της διά βίου μάθησης, της ποιότητας και της δυνατότητας μεταφοράς των μαθησιακών επιτευγμάτων, με τρόπο βιώσιμο, ανάμεσα στις διόδους εκπαίδευσης, προκειμένου να εξυπηρετηθούν καλύτερα οι ανάγκες των εκπαιδευομένων, της κοινωνίας και της αγοράς εργασίας. Οι συνεχώς αυξανόμενες απαιτήσεις που βασίζονται στη γνώση στον τομέα της παραγωγής και της παροχής υπηρεσιών απαιτούν τις κατάλληλες εννοιολογικές προσαρμογές, όσον αφορά τη διαμόρφωση προγραμμάτων στο πλαίσιο της ακαδημαϊκής εκπαίδευσης και σε όλο το εύρος των τομέων της μετα-δευτεροβάθμιας εκπαίδευσης.
Αυτό το κεφάλαιο προϋποθέτει τη δυνατότητα ενός συμβατού πρακτικού προσανατολισμού της ακαδημαϊκής εκπαίδευσης, και πέρα από αυτήν, για την απόκτηση πλήρους επάρκειας ως προς την αξιοποίηση των κατάλληλων γνώσεων, δεξιοτήτων και ικανοτήτων, προκειμένου να αντιμετωπισθούν σύνθετα προβλήματα και καθήκοντα. Αρχικά προσεγγίζει το θέμα εντός του πλαισίου των σχετικών εξελίξεων στη μετα-δευτεροβάθμια εκπαίδευση των ΗΠΑ, σε επίπεδο συστήματος και πολιτικής και σε εννοιολογικό επίπεδο

[1] Dr, Federal Institute for Vocational Education and Training (BIBB), Germany, rein@bibb.de.

αναφορικά με τα εργαλεία και τα προσόντα. Έπειτα, συζητά τα εμπειρικά στοιχεία που έχουν προκύψει από την έρευνα, τόσο σχετικά με τις κατάλληλες εννοιολογικές εξελίξεις που είναι προσανατολισμένες στις ικανότητες στο πλαίσιο των προπτυχιακών προγραμμάτων μετα-δευτεροβάθμιας εκπαίδευσης όσο και στις σχετικές διασυνδέσεις με τα προγράμματα που δεν παρέχουν πτυχίο και εκείνα που παρέχουν πτυχίο Bachelor. Τέλος, εξετάζονται βασικές εννοιολογικές και πρακτικές επιπτώσεις για την ακαδημαϊκή και επαγγελματική μάθηση και πιστοποίηση στη μετα-δευτεροβάθμια εκπαίδευση και κατάρτιση των ΗΠΑ και πέραν αυτών.

Λέξεις- κλειδιά
Μετα-δευτεροβάθμια εκπαίδευση των ΗΠΑ, ακαδημαϊκή και επαγγελματική μάθηση, ικανότητα, συνδεσιμότητα- διασύνδεση, διαπερατότητα.

The problem and the approach

The increasing knowledge-based requirements in manufacturing and service areas as well as the trend to academic qualification of advanced skilled workforce in all countries require appropriate systemic, instrumental and conceptual adaptations of postsecondary education to address the needs of the societies, labour markets and the learners in terms of lifelong learning.

Since the 1980s, in the US as in other countries experts and major stakeholders in politics, educational practice, research and economics have been discussing the increasing demand for a competency-oriented shift to learning outcomes in shaping education programmes and qualifications in postsecondary education at all levels (cf. USED 1983; Bjornavold & Zahilas 2008). The debate in academic Higher Education (HE) and Technical Education (TE) including Vocational Education and Training (VET) about competency-oriented postsecondary education and training is taking place in the context of increasingly knowledge-intensive requirements for skilled technical and management labour force in the major professional fields of production as well as in service areas. Furthermore, this debate is connected to a need for corresponding sustainable reforms in educational concepts to shape programmes and credentials in appropriate ways to promote lifelong learning across institutional systems and cultures (cf. Bailey 2003). In terms of connective pathways education and training experts have been discussing since the 1990ies the ongoing problem of curriculum compatibility between academic and technical education, particularly the lack of overarching design requirements for curricula, for teaching and assessment as well as for articulation and transfer agreements towards the bachelor track and beyond (cf. Grubb & Stasz 1993).

Like in other countries competency orientation is regarded in the US as a multipurpose glue facilitating the development of appropriate solutions with this respect. But sectoral

and institutional barriers in US postsecondary education combined with traditional mindsets are still very sustainable. Universities have predominantly provided discipline-specific and knowledge-based competency achievements, while TE has focused on action-oriented capability in functions, tasks and processes. Both education sectors articulate in their different ways the comprehension of practice as a central reference point in education and training and in the design of qualifications. However, the intersections of relevant competency approaches used in HE and TE have not yet been sufficiently discussed up to now to develop concepts for compatible competency-oriented qualifications to promote their connectivity across the education sectors.

This chapter focuses on subsequent considerations on appropriate theoretical, instrumental and practical approaches on competency-oriented education which might be applicable for a compatible development and design of programmes both within academic Higher Education and at the interface towards non-degree education and training. It is assumed this will match the requirements both in academic and in non-academic areas without a substantial loss of quality and this will promote the connectivity of the qualifications and the transferability of learning outcomes between the two education sectors in terms of lifelong learning. The chapter discusses findings and insights from an empirical research of the author in the US in 2018 regarding relevant competency-related approaches in US postsecondary education and training at Associate level and towards neighboring requirement levels, which try to address academic and professional requirements in a compatible and integrated way. This concerns further considerations on an improved theory-practice linked design of credentials, the development of profiles, curricula and assessment of programmes as well as articulation regulations between degree programmes and between academic and non-degree learning to promote the progression and the employability of the learners.

As academic entry qualifications and so-called short cycle qualifications, Associate degree programmes play a key role in US postsecondary education to link academic-oriented and occupation-oriented learning as well as degree learning and non-degree learning. Work-based learning can be recognized in Associate programmes via dual enrollment regulations and Associate programmes can be embedded in Bachelor programmes via dual admission arrangements to facilitate academic progression. The research concentrated on regular Associate programs, Associate programmes which embed apprenticeship programmes or certificate programmes and Associate programmes which are linked to or embedded in Bachelor programmes. The term

competency is used in US education both in the sense of an activity and behavior specific capability and as a holistic understanding of capability like the term competence in the context of EU education policy and practice.

The chapter first approaches the topic in the context of relevant previous and current developments and in US postsecondary education concerning the system and policy level and the instrumental and qualification conceptual level. Then the empirical findings and insights are discussed along guiding questions, as summarized essentials of interviews with education experts and of the analysis of programmes and relevant institutional and policy documents. The empirical research focused on five community colleges in four Federal States, which were either involved in the *US TUNING* programme of the National Institute of Learning Outcome Assessment (NILOA) or in the *Right Signals* programme of the *American Association of Community Colleges* (AACC). *US Tuning* intends to facilitate academic programme design along the proficiency oriented parameters of the Degree Qualifications Profile (Lumina 2014) and *Right Signals* tries to promote the design of any credentialized programme along the competency oriented Credentials Framework for Lifelong Learning (cf. AACC 2017). In addition numerous interviews and discussions were carried out with education researchers at several universities and with education experts at several major policy institutes and education associations in the US.

Relevant developments and the state of play in US postsecondary education

System and policy developments

As in other highly industrialized countries, the globalized knowledge-based economy in the US requires in terms of lifelong learning a postsecondary education system that contributes significantly to the development of knowledge and skills to address the dynamic developments in not only technology and work organization but in society as a whole. Predicted in the pioneering study *Help Wanted* on labour market and education projections (Carnevale, et al. 2010), about two-thirds of job openings in the US required at least some postsecondary education and training in 2018, with an increasing number in the middle-skill occupations covered by workers with an Associate degree or an occupational certificate. In this study, the Center on Education and the Workforce (CEW), a Georgetown University-based research institute, highlighted with convincing empirical data that US education policy will not achieve its objective of increasing postsecondary education graduation rates by focusing predominantly on promoting

college completion rates. According to the CEW study, over 7.7 million US citizens participate in non-credit programmes that can be considered to correspond to credit-bearing programmes. Today, as for the past forty years, circa 40 % of adults have earned an Associate degree or a Bachelor degree, whereas in other OECD countries, more than 50 % of young adults have earned similar degrees and educational attainment rates are on the rise.

While Associate degrees are potentially portable and designed to articulate towards the next higher educational credential, the portability of certificates within education is still limited. This depends on institutional articulation and transfer policies, and on their value in the labour market, particularly on the employer requirements for hiring and promotion. Additionally, the non-credit programmes offered by government, business employers and other training providers or vendors include a diverse number of certifications, apprenticeship training, adult education, job readiness and dislocated worker training. (cf. Bird, et al. 2011, Rein 2011 and 2015a)

Students and employers complain that the lack of portability of competencies earned in work-based and other non-credit programmes costs individuals enormous amounts of time and money. They demand a nationwide implemented instrument for the recognition of prior learning and work experience. (cf. Carnevale, et al. 2010) The business community increasingly demands the accountability of credentials in terms of the value added and the assurance of skills and abilities needed. The lack of common definitions and standards underlying occupational credentials especially related to middle-skilled jobs contributes to considerable confusion about their value in the labour market and how they relate to academic credentials. (Bird, et al. 2011) At the same time, however, academic higher education often fears that in making itself accountable in this way, it will become akin to vocational training. (Adelman 2009) Up to now any promotion of increased education and training completion in the US has not been grounded in a consistent public understanding as to what constitutes a degree or a credential that defines what a credential represents in terms of what a student knows, understands and is able to do.

US education politics have, for a long time, been determined by the ongoing deficits in general education and workforce development. (cf. USED 2005) The political debate on postsecondary education currently focuses on measures to promote institution and programme accountability and to increase college completion in order to address the relevant labour market demands for an advanced skilled workforce (cf. Birtwistle &

McKiernan 2010). Therefore, the Federal administration has made increased degree and credential completion a national priority, which can be accomplished at a Community college or a four-year college as well as via vocational training, apprenticeship or industry certification. It stressed that US postsecondary education urgently needs quality improvements and an increase of the degree and credential completion rate to meet competitive workforce requirements. In one third of the Federal States more than 90 Community Colleges grant about 900 Bachelor programmes. State officials look to accommodate non-traditional and low-income students, because the tuition fees for Bachelor programmes are much lower at these institutions (cf. Povich 2018).

Instrumental Developments

Following a US benchmark study on principles and instruments of the European Higher Education Area (EHEA – Bologna Process), both academic and Career and Technical Education and Training in the US are basically facing the same requirements of lifelong learning and employability. Therefore, the study recommended to develop their education programmes and qualifications along learning outcome approaches (see Adelman 2009). Advanced articulation agreements and dual admission alliances between Community Colleges and four years colleges already provide appropriate approaches in this respect (cf. Bragg et al. 2009).

The Degree Qualifications Profile (DQP) framework for academic US higher education initiated by the Lumina Foundation defines educational quality in terms of student learning and learning outcomes. The DQP focuses on *proficiency* as the instrument's guiding key term, understood as a label for a set of demonstrations of knowledge, understanding and skills that satisfy the levels of mastery sufficient to justify the award of an academic degree. The DQP had been tested by over 400 higher education institutions in more than 30 Federal States in terms of curricula revisions and alignments to the profile. (Lumina Foundation, 2014) This was supported by US TUNING under the auspices of 6 major US accreditation bodies. (Tuning USA 2010) It is regarded as a baseline set of reference points of learning outcomes for what academic graduates of Associate, Bachelor or Master degrees should know and be able to do.

The education policy debate in the US welcomed the DQP as a big step forward to improve the quality of higher academic education in the US. However, more labour market oriented education experts demanded going beyond a degree-oriented approach. The CLASP report *Give credit where credit is due* (Bird et al. 2011) proposed creating a

nation-wide operating competency-based qualifications framework for all postsecondary education and training credentials as keys to individual self-sufficiency, greater civic participation, and higher levels of family well-being as well as the catalysts for local, regional, and national economic growth. The report complains on the one hand that a vast number of adults in the labour market engage in creditworthy occupational education and training. But, in the absence of a system, appropriate instruments and procedures which can equate noncredit occupational education and training to educational credit, they cannot translate their education and training into postsecondary credit. In addition, it is required to reduce institutional barriers between credit- and noncredit-bearing education and to revise the traditional input-driven US credit transfer system towards an outcome and cross-sector-oriented approach.

Consequently in 2014 Lumina started the development of a sector-overarching US-wide qualifications framework for lifelong learning to address both degrees and non-degree credentials and released after test based revisions a beta version in 2015 (Lumina Foundation). As in previously developed national and regional qualifications frameworks (cf. EU 2008), the Credentials Framework focuses on learning outcomes to address required competencies as common reference points in terms of what the learner knows and is able to do in different contexts such as colleges or training providers. The Lumina Foundation intends to use the CF in terms of a system for communicating and connecting diverse credentials and facilitating student progression. Following the preceding policy and expert debate, this approach tries to address both degrees as well as non-credit credentials like certificates, industry certifications, licenses, apprenticeships and badges. Supported by a common language, the instrument intends to facilitate understanding and comparison of the levels and types of knowledge and skills underlying the credentials. Like other qualifications frameworks for lifelong learning, the Credentials Framework tries to promote the transparency and the comparability of credentials as well as their portability to facilitate the recognition of learning acquired across institutions, e.g., via credit transfer. (cf. Rein 2016).

The CF has been organized around requirements and competencies that are addressed by learning outcomes. They are described in *knowledge* and *skills* regarded as learning domains of *competency*, which is classified as the key term of the instrument. The CF goes beyond DQP's key term *proficiency* and uses *competency* as the overarching-key term in a holistic comprehension of behavior and capability, that implicitly includes, the credential achievement perspective of the DQP.

The CF is a key instrument of the Foundation's initiative *Connecting credentials* to promote learning and credential accomplishments. To increase the acceptance, the Lumina Foundation started a national dialog about how to create a more seamless and comprehensive system of credentials. This includes the major stakeholders of postsecondary education such as federal and state government agencies, education providers and employers. (cf. Birtwistle & McKiernan 2010) Finally, a pilot alignment of credentials of all forms and types to test the validity and applicability of the descriptors, levels and domains is carried out. (cf. Lumina Foundation 2016).

Qualification Conceptual Developments

Meanwhile competency-based education is the guiding principle of programme development in US education enforced by state standards e.g. in Florida or in Federal regulations. More than 80 % of all Colleges and Universities had adopted in 2013 stated learning outcomes for all their undergraduate programmes. And the demand is increasing predominantly driven by accreditation agencies to promote especially the policy objectives programme accountability and employability of graduates. (cf. Jankowski & Marshall 2018)

As academic entry qualifications Associate degree programmes play a key role in US postsecondary education to link academic-oriented learning and occupation-oriented learning as well as credit learning and non-credit learning. Via dual enrollment regulations e.g. work-based learning can recognized up to 25 % in Associate programmes. Furthermore, Associate programmes can be embedded in Bachelor programmes via dual admission arrangements, which facilitate the academic progression of students. However up to now academic and occupation oriented learning outcomes in curricula and assessments are rarely developed in an integrated way across the whole programme but defined in separated modules.

Since the beginning of this decade many education initiatives and stakeholders in the US are working on a de facto nation wide zone of mutual trust in terms of transparency, portability and connectivity of achieved learning outcomes across degree programmes and non-degree programmes. (cf. Adelman 2009).

A number of state and institutional innovations in *cross-walking* credit and non-credit learning to assess prior learning had been implemented in the recent years (Bird et al. 2011). Indiana's *Ivy Tech Community College System* uses a *certification crosswalk* to automatically award a consistent amount of academic credit for industry certifications

and apprenticeships. (Indiana Ivy Tech Community College System, 2010) Wisconsin's technical colleges system considers apprenticeship programmes to be credit relevant for an Applied Associate in Science (AAS) degree (Lerman 2009). The *Kentucky Community and Technical College System* offers *embedded credentials* (KING-SIMMS 2007) and the University of Wisconsin-based Center on Wisconsin Strategy recommends portable, sub-baccalaureate occupational credentials, e.g., relevant for the emerging clean energy sector. (cf. Center on Wisconsin Strategy 2010).

The current resurgence of interest in apprenticeship in the U.S. is evident, because it is supposed to enhance skills and wages, reduce unemployment, raise economic mobility, increases the quantity and quality of middle skill careers even with connections to academic progression. Apprenticeship linkages with education providers in the U.S. are promoted by the *Registered Apprenticeship Community College Consortium* (RACC), a national network of postsecondary institutions, employers, unions and associations working to create opportunities for apprentice graduates who may want to enhance their skills by ultimately completing an Associate's or Bachelor's Degree. College members agree to provide credit for a Registered Apprenticeship completion certificate as recommended by a recognized third party evaluator. While thousands of agreements exist between a single college and local Registered Apprenticeship programme, RACC created a national network of colleges and Registered Apprenticeship programmes aimed at helping apprentices complete postsecondary degrees. (cf. Rein & Lerman 2014). In South Carolina the technical college system collaborates state wide with companies in terms of degree programme embedded apprenticeships, which require integrated curricula and assessment formats as well.

The US TUNING programme supported by the Lumina Foundation is testing the learning outcome oriented approach in programmes at two year and four year colleges in line with the Degree Qualifications Profile. In a number of Federal States in selected disciplines criterion-based learning outcome statements and effective formative assessments had been developed in the last years, in order to promote both academic quality and employability on the non-academic labour market as well. (cf. TUNING US 2010 & 2019)

Which competency-oriented conceptual approaches to address both academic and occupational requirements in a complementary way are applied in Associate programmes and what is the predominant referential basis of these approaches?

Based on the key learning dimensions knowledge, skills and attitudes (cf. Hunter 2005) in US education the selected Community Colleges apply more than one conceptual approach to classify and to describe comprehensive competency-oriented learning outcomes in the development of Associate programmes and beyond. They use the updated version of Bloom's taxonomy of educational objectives (cf. Anderson & Krathwohl 2011) to express course outcomes along the cognitive domain (in terms of knowledge, comprehension, application, analysis, synthesis, evaluation), the affective domain (in terms of reception, value, organization, characterization) and the psychomotor domain (in terms imitation, manipulation, precision, articulation, naturalization). (cf. Montgomery Community College - MCC 2009) For this purpose the definition of competency-oriented learning outcomes require active verbs that target what students are expected to demonstrate e.g. create, compose, calculate, develop an evaluate. (cf. Miami Dade College – MDC, Florida 2018).

The selected Community Colleges developed and use their own manuals or guidelines for cross-over or general education key competencies (e.g. analytical reasoning) integrated in major core competencies as well as for learning outcomes for non-academic practice e.g. in business administration, information technology and nursing to address cognitive abilities, performance and affective skills. In 2003 the *Community College of Baltimore County* (CCBC, Maryland) identified core competencies concerning communication, problem solving, global perspective and social responsibility, integrative learning and personal management). These competencies are regarded as appropriate benchmarks for student learning and outcomes assessment to develop the knowledge, skills, and behaviors students would need as learners, workers and engaged citizens. (Community College of Baltimore County 2014).

In the following years all other selected Community Colleges additionally defined comprehensive key competencies such as communication skills, quantitative reasoning, scientific reasoning, social and behavioral skills, aesthetic awareness, information & technology literacy and value competencies to be implemented in General Education and in majors. (Montgomery Community College 2018).

All courses outside the General Education curriculum use specific course content as the vehicle for the development of one or more of the indicated abilities associated with

the core competencies. A variety of assessment tools are used to gather evidence of student achievement in developing these competencies in the learning activities. Some Community Colleges require the acquisition of key competencies especially in Associate programme capstone courses, which can be difficult to coordinate multiple dimensions of learning & assessment.

In the recent years the selected Community Colleges used the systematic of the reference instruments Degree Qualifications Profile (DQP) and Credential Framework for Lifelong Learning (CF) to describe learning outcomes in terms of knowledge and skills. In addition the DQP includes the learning dimension. The DQP uses proficiency as its overarching term which to a high degree matches a comprehensive understanding of competency, the key term of the CF. The colleges use the comprehensive CF descriptors to an increasing extent. Many US Colleges including some of the selected colleges had been selected to participate in the American Association of Community College's Right Signals initiative. This initiative, supported by the Lumina Foundation, promotes testing the CF in terms of its comprehensive learning outcome and to identify indicators for a model for recognizable credentialing nationwide. (Miami Dade College – MDC 2016) In addition the selected colleges use the job descriptions of Occupation Network (O-NET; USDOL) as a nation-wide labour market reference tool as well.

In the US an education for civic capabilities and civic engagement is based on a long societal tradition. The DQP addresses these capabilities by the proficiency dimension *Civic and Global learning*. At the selected Community Colleges this is predominantly linked to key competencies and implicitly directed to be applied both in the public and in the professional domain. Civic engagement is predominantly taught in specific courses or learning units of *service and civic learning*. College practitioners from both Community Colleges and four year colleges demanded a better linkage to major courses and an improved promotion by appropriate pedagogic methods and adjusted practice (cf. Borough of Manhattan Community College – BMCC 2018).

The selected colleges predominantly carry out programme development based on research along the DACUM methodology (Jones 2002) and involve faculty members as well as experts from cooperating four years colleges and regional industries in these processes.

At the *Northern Virginia Community College* (NVCC, Virginia) as at other Community Colleges student learning outcomes (SLO) define in programme curricula what students know, are able to do, and value by the end of a learning experience, e.g., in a course.

SLO should be specific, attainable, results-oriented, measurable, time-bound and comprehensively defined relevant both for degree-awarding and career and technical programmes (e.g. certificates). (NVCC 2017).

Since 1999 CCBC defines and practices its institutional learning outcomes assessment as a systematic and collaborative process to improve student learning. Student achievements are defined in terms of learning outcomes and core competencies using pre-determined internal standards and external benchmarks e.g. via requirement research at industries to determine what students know, what students can do with what they know, and how well they do it. The college assesses and reviews degree programmes as well as career and transfer programmes by in-depth and multi-dimensional studies every five years. The intended college student learning outcomes are understood as part of a definition, mapping, assessment and review cycle process.

Maryland implemented a state framework for programme development in terms of competency related learning outcomes through 2021 which require to develop student's general knowledge, values, skills and abilities to participate in and contribute to the society beyond the workplace. (Maryland Higher Education Commission 017).

The accreditation agencies as well expect the degree programmes to be designed along competency oriented learning outcomes. Like other colleges *Montgomery Community College* (MCC, Maryland) adopted a set of General Education competencies that are aligned with the characteristics of excellence of the accrediting association *Middle States Commission on Higher Education* (MSCHE 2018) comprehensive competency oriented programme design in Higher Education.

Do these competency oriented learning outcomes defined in the programmes address both requirements in assessment (curricula and examinations) and articulation procedures?

All selected Community Colleges use their manuals and guidelines for learning outcomes both for programme assessment and articulation purposes. Some colleges developed an Associate programme design guideline based on the test results of the Credentials Framework cross-over descriptors for learning outcomes to facilitate transfer as well. Although they developed guidelines for major core competencies together with experts from four years colleges, these guidelines have not yet been accepted by those colleges in terms of articulation purposes. Many faculty members at senior colleges say changes infringe on their autonomous curricular role. Furthermore,

four years colleges and universities try to increase the quality of Bachelor programmes by integrating research oriented competency requirements. (City University of New York City – CUNY 2018).

Learning outcomes can be articulated and assessed at the course level, the programme level, and the institutional level. While the *Middle States Commission on Higher Education* does not mandate that outcomes must be assessed at all three levels, it does require that they at least are articulated at all three levels. The selected Community Colleges have large transfer rates to local universities. At MCC 85 % Associate graduates transfer to four year colleges which have an interest to compensate the decreasing number of Bachelor students. The University of Maryland System has streamlined and enhanced the transfer pathways from Community Colleges into the university system via more standardized procedures.

Academic-occupational *bridges* by recognition of prior learning are possible since a long time. But only less than 50 % of the Associate programme credits can be covered by documented learning achievements of non-degree programmes (e.g. certificates, apprenticeships).

The current Maryland State Plan for Postsecondary Education promotes credit for any prior learning and the need for a statewide competency-based approach. (MHEC 2017)

So-called embedded programmes, which include non-degree programmes e.g. apprenticeships or certificates are widespread but they are not designed along a comprehensive learning outcome approach that addresses both academic and occupational academic requirements per se. Learning outcome relevant co-operations with a four years college respectively universities in articulation agreements by majors is evident (cf. CCBC 2018).

Dual admission of Associate and Bachelor programmes (e.g. business administration and nursing) facilitate a greater learning outcome compatibility. All dual admission courses shall be designed equivalent to the pedagogical, theoretical, and philosophical orientation of the cooperating colleges concerning student learning outcomes, components of the syllabi, level and rigor of content, assessment and evaluation of student learning outcomes, and instructional effectiveness. (cf. NVCC 2018).

At *Miami Dade College* (Florida) the conceptual curriculum framework of Bachelor programmes for registered nursing encompasses the Associate Degree components expected of all diploma and Associate degree nursing graduates. They are further enhanced in conjunction with the utilization of the baccalaureate core components to

expand the knowledge base and expectations of the baccalaureate nurse. The BSN Core Competency Components e.g. critical thinking and professionalism are defined in a requirement compatible way towards the Associate level which facilitates a seamless learning and acquisition of relevant competencies.

Which other competency-oriented nation-wide implemented conceptual approaches are discussed and operationalized to address both academic and occupational requirements in a complementary way?

ACE: CREDIT

The American Council on Education's College Credit Recommendation Service (CREDIT) had been nationwide implemented in 1974 to connect workplace learning with colleges and universities by helping students gain access to academic credit for formal training taken outside traditional degree programmes. With over 35,000 programmes reviewed, CREDIT is the national leader in the evaluation process for education and training obtained outside the classroom including courses, training programmes, certifications, exams, apprenticeships, and other types of nontraditional forms of training to determine eligibility for college credit. Over 40 years, colleges and universities have trusted ACE CREDIT to provide reliable course equivalency information to facilitate credit award decisions. Participating organizations include corporations, professional and volunteer associations, schools, training suppliers, labour unions and government agencies. CREDIT is part of ACE's contribution to flexible completion pathways, which helps students to earn valuable credentials and to achieve their professional goals. In 2019, the CREDIT transcript has been transformed into a modular, digital profile that includes workplace competencies in addition to credit recommendations, allowing students to use their training to seek new employment opportunities as well as apply to college. (cf. ACE 2018).

The CREDIT Course Review is the most widely used course evaluation programme and stresses academically sound methods. The reviews are carried out by experienced college and university faculty who assess the content, scope and rigor of an organization’s training programmes, courses or examinations and make appropriate recommendations for comparable college credit. ACE review teams embrace the philosophy that what an individual learns is more important than when, where, and how the individual learned it. An ACE evaluation is a rigorous, hands-on process conducted by a team of teaching faculty from relevant academic disciplines, representing a

diversity of colleges and universities. The teams assess and validate whether the courses, occupations, or professional examinations have the appropriate content, scope, and rigor for college credit recommendations that may be eligible for academic transfer.

At *NVCC* Associate students may be granted credit for courses or programmes offered by employers, professional organizations, and other agencies if those courses or programmes have been evaluated by the American Council on Education (ACE) College Credit Recommendation Service.

The applied equivalency matching methods in CREDIT and other instruments are competency-oriented but not designed in a systematized way based on one of the approaches discussed in the previous section. An open question is whether the discussed CF will be used in the future to facilitate cross-walking between credit and non-credit learning to assess prior learning, e.g., between academic Associate degrees and apprenticeship programmes in terms of the benefit for educational institutions and learners as well as employers and employees. (cf. Keevy, Rein et al. 2018) For this purpose reference instruments like the DQP and the CF are gradually used in these processes.

CCRC: Guided Pathways

Synthesizing two decades of research on Community colleges the *Community College Research Center* (CCRC) at Teachers College, Columbia University initiated and coordinates the programme *Guided Pathways* since 2017 at more than 250 CC to increase nationwide the Associate degree completion achievement (Jenkins et al. 2017). At their core, guided pathways reforms involve mapping programmes to specify course sequences, progress milestones, and programme learning outcomes so that the students know what they need to prepare for a career and further education and training in their field of interest. The guided pathways approach has become a national reform movement in community colleges. Major national initiatives such as the AACC Pathways Project implemented to design structured academic and career pathways at scale are supporting colleges nationwide to implement and to refine the model (cf. AACC 2017).

An essential element of this concept is mapping programmes via *Meta Majors, i.e.* broad career focused fields e.g. in social science and engineering, which are based on core competency oriented learning outcomes. The cross-over descriptors of the

Credentials Framework are used as well as a conceptual reference basis. The *Meta Majors* are developed in cooperation with experts on non-degree credentials like industry certifications and four years college experts on Bachelor and graduate programmes. This methodological approach shall safeguard a better conceptual connectivity of credentials within a programme and towards other degree programmes (e.g. Bachelor) and non-degree programmes (e.g. industry certifications) in order to promote bridges between learning inside and outside classrooms.

Most of the Tennessee Community Colleges started to systematize and deepen their processes for developing and reviewing programme learning outcomes by identifying the competencies required in programme-related employment and further (academic) education and by using the results of programme learning outcomes assessments. These colleges have established programme learning outcomes for each of their Associate for Applied Science programmes which are linked to their occupational certificate programmes. At *BMCC* (New York City) the cross-over *Guided Pathways* approach is implemented via career-cluster orientated design of Business, Health, and Media programmes.

AACU: Essential Learning Outcomes

Launched in 2005 by the Association of American Colleges & Universities (AACU), *Liberal Education and America's Promise* (LEAP) responds to the ongoing demand both for more college-educated workforce and for more engaged and informed citizens. This programme assumes that college graduates need higher levels of learning and knowledge as well as stronger intellectual and practical skills to navigate successfully and responsibly in more demanding economic and societal environment. For this comprehensive purpose LEAP developed the *Essential Learning Outcomes* (ELO) as a guiding vision and practical approach to college learning as a cumulative progress. These competencies are in a detailed manner described in the rubrics **Intellectual and Practical Skills, Personal and Social Responsibility, Integrative and Applied Learning.** These rubrics had been taken into account in the development of the DQP structure and the defined ELO have strong intersections with similar defined catalogues of key competencies e.g. used at Community Colleges. (cf. AACU 2005)

NILOA: Learning System Paradigm

The National Institute of Learning Outcome Assessment (NILOA) affiliated with the University of Illinois at Urbana-Champaign, Ill. comprehends appropriately defined learning outcomes as an essential factor for successful learning relevant beyond curricula development for examinations, recognition of prior learning, accountability etc. The institute developed the *Learning System Paradigm* (Jankowski & Marshall 2018) which requires an alignment of evident learning demonstrated in all learning environments including non-academic areas. This involves curricular mapping, scaffolding, assignment design, delineation of career pathways, co-curricular engagement.

In this way the required competences of prospective academic professionals shall be unpacked and re-defined. To safeguard programme quality and compatibility the development of interdisciplinary capstone courses across all programmes is recommended. NILOA recommends as reference tools for its work the learning outcome dimensions and its descriptors of the DQP such as:

- Specialized knowledge, what students should demonstrate with respect to their field of study
- Broad and integrated knowledge, where students apply and integrate learning from different fields
- Intellectual skills, composed of analytic inquiry, use of information resources, ability to engage diverse perspectives, ethical reasoning, quantitative and communicative fluency,
- Applied and collaborative learning
- Civic and global learning.

Furthermore NILOA's Paradigm recommends the related TUNING USA methods in terms of curricular mapping and reframing programme quality:

- Definition of discipline specific core competencies and learning outcomes
- Mapping career pathways
- Consulting major stakeholders (e.g. faculty, employer groups and learners)
- Revision of core competencies and learning outcomes following the consultation
- Implement the the insights and results at the institutional level.

In addition the institute recommends the application of the *Essential Learning Outcomes* to address key competencies.

The *Learning System Paradigm* operationalizes the *Shift from Teacher to Learner* (cf. Tagg 2003) via the *Constructive Alignment* (cf. Biggs 1996) of curricula development, didactics and assessment and the *Coupling* (cf. Weick 1976) of multiple sites of learning including employment areas as essential conceptual prerequisites (cf. Jankowski & Marshall 2018). The paradigm requires especially trust and consensus among all relevant stakeholders i.e. faculty from different colleges, researchers, industry employers and learners. It is emphasized that the paradigm tries to follow the holistic approach of education by meeting the learner as a productive individual, engaged citizen and a fulfilled human being. (Jankowski & Marshall 2018:14)

Following interviewed AACC experts an increasing number of Community Colleges is taking into account NILOA's work on the *Learning System Paradigm* in order to improve the transfer to the labour market and further academic education.

Conclusions and Outlook: What are the current challenges and possible practical and political options for a competency-oriented shaping of degrees and other postsecondary credentials in terms of bridging professional-academic requirements?

The shift to competency-oriented programmes in US postsecondary education institutions is an enduring work in progress. This includes any development to *bridge* conceptually professional/occupational and academic learning as well. The concerns are sustainably strong that current institutional autonomy, quality and perspectives might be weakened by this approach.

However it is more and more evident that a conceptual dichotomy does not exist per se for the design of education and training programmes and credentials addressing both academic and professional requirements in a compatible way. Based on cross-over, subject-related, social and personal competencies, there is an implicit common competency-oriented potential to act and to apply learning outcomes in specific contexts of learning and work to solve complex problems. (cf. Rein & Majumdar 2018).

An increasing trend to "bridge" occupational and academic learning practically in many ways is evident. This does not take place on a basis of an overarching conceptual approach for a compatible programme development the education stakeholders might have agreed on. A cross-over understanding of academic and occupational learning has not yet been generated and operationalized at large scale for programme design in US post-secondary education sectors. All discussed instrumental approaches share a

common conceptual intersection and this provides sufficient stimuli for further considerations.

The application of overarching key competencies and core competencies of majors as they are already facilitated by manuals and guidelines in college, might promote such developments in future in all programme areas and institution-wide. This also supports learning and teaching of civic engagement capabilities being relevant for both public and professional domains. Furthermore, the *translation* of descriptors of comprehensive reference instruments like the DQP and the Credentials Framework to programme area specific requirements may support this development as well, as it has been promoted by *US Tuning* and by the *Connecting Credentials* initiative.

The approaches and experiences of ACE's CREDIT, CCRC's Guided Pathways, AACU's Essential Learning Outcomes and last but not least NILOA's Learning System Paradigm provide as well a sound basis for further considerations to facilitate lifelong learning in the context of academic education in the US and beyond.

How will the sector overarching CF approach contribute to clarify the traditional concepts of *degree* or *certificate*, i.e., the concept of connectible credentials (and associated competencies) that doesn't blur the essential characteristics of specific educational systems? The current guide to use the CF as a universal credentials translator recommends comparing competencies described by credentials via an atomized approach (Lumina, 2016).

The traditional challenge between the academic perspective and workforce development perspective might be reduced and even overcome, if programme developments are carried out based on appropriate research approaches without any quality reduction more than before. This should take into account both empirically analyzed work requirements and already existing relevant (inter)disciplinary knowledge and perspectives, which could be in the interest of industries as well. It is assumed that research-generated knowledge and work experience-generated knowledge can be competency-oriented and level-oriented linked in postsecondary education and training programmes. An open question is whether the long-term experiences of the century old and well established co-operative education at colleges and universities could be taken into account in terms of theory/practice, academic/professional, degree/non-degree curricular, assessment and articulation linkages in the US postsecondary education and training system?

Furthermore, a consequent cross-over approach requires a constructive alignment of programme profiles, curricula, assessment and last but not least an appropriate didactic. This promotes a compatible perspective and language to describe learning outcomes in terms of transparency, comparability, and progression. (cf. Rein 2017).

The proposed measures can be dead ends if they are not implemented institution-wide in terms of horizontal and vertical credential connectivity. This requires not only an IT based matching of course equivalencies, but adjust conceptually programme developments, which try to link degree and non-degree learning in a systematic way. Standardized requirements of general education outcomes to better link them to other majors of any Associate programme is another option recommended by interviewed education experts.

At last the ongoing shift of the traditional input driven US credit transfer system to an outcome and competency oriented practice supports sustainably bridging academic and occupational learning starting at secondary education and across postsecondary education. This might facilitate fundamentally the credit transfer within the whole US postsecondary education and training system and linked to the secondary education system as well. Such a revision would essentially complement the function of the Credentials Framework. (cf. Rein 2016) This has not yet been achieved in EU education systems as well.

The demand for an increase of postsecondary credentials access is shared for a long time by the US governments at federal and state level and by other major stakeholders like business employers, research institutions and foundations to address urgent societal and economic needs in the US. Competency oriented programmes and seamless credential pathways are regarded as important measures to achieve this objective. In this perspective the discussed intersections between academic education and lifelong learning is evident in the light of the discussed provisions and developments at Community Colleges. In yet it is also clear that the increasing focus in US postsecondary education on the demands of the labour market demands determines academic education to a great extent e.g. via a workplace oriented training design of programmes.

A competency oriented bridging of academic and occupational learning might have the potential to overcome cultural mindsets at system level (college vs non-college education), at institution level (two year vs. four year college) and at discipline level (technical sciences vs. liberal arts), facilitated by a common language and understanding

e.g. of key terms like knowledge, practice and work. A holistic mastery in majors and disciplines as well as capabilities in personal development and civic engagement the traditional objective being accepted in all US education areas might provide an appropriate backbone for such a development of a comprehensive learning and credentialing.

In this perspective competency orientation understood across the sectors as a comprehensive concept might also have the potential to reinforce the concept of Higher education and lifelong learning as a common good, which includes as well enabling for civic engagement beyond the currently prevailing utilitarian perspective.

References

Adelman, C. (2009). *The Bologna Process for U.S. Eyes. Re-learning Higher Education in the Age of Convergence*. Indianapolis, IN.

American Association for Community Colleges (2017). *Right Signals Initiative.* Washington D.C. *https://www.aacc.nche.edu/programs/workforce-economic-development/right-signals-initiative-2/.*

American Association for Community Colleges (2017). *Pathways Project. https://www.aacc.nche.edu/programs/aacc-pathways-project/.*

American Association for Colleges and Universities. (2005). *Essential Learning Outcomes.* https://www.aacu.org/leap.

American Council of Education. (2018): *American Council on Education's College Credit Recommendation Service.* https://www.acenet.edu/news-room/Pages/College-Credit-Recommendation-Service-CREDIT.aspx.

Anderson, L.W., Krathwohl, D.R. (Eds.) (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives***.** Boston, MA: Allyn & Bacon.

Bailey, T.R., Matsuzuka, Y. (2003). *Integration of Vocational and Academic Curricula through NSF Advanced Technological Education Program.* New York City, NY.

Bird, K., Ganzglass, E., Prince, H. (2011): *Giving Credit Where Credit Is Due: Credentialing and the Role of Post Secondary Non-Credit Workforce Learning.* Washington, DC.

Birtwistle, T., McKiernan, H.H. (2010). Making the implicit explicit: Demonstrating the value added of higher education by a qualification framework. *The Journal of College and University Law, Vol. 36, No. 2, 2010,* 512-564.

Bjornavold, J., Zahilas, L.(2008). *The shift to learning outcomes.* Thessalonica.

Borough of Manhattan Community College (2018). *Service Learning.* New York City. https://www.bmcc.cuny.edu/event/service-learning-in-the-classroom-2/).

Bragg, D.D., Townsend, B.K., Ruud, C.M. (2009). *The adult learner and the applied Baccalaureate. Emerging lessons for state and local implementation* http://occrl.ed.uiuc.edu/Projects/lumina/AppBaccBrief.pdf.

Carnevale, A. Smith, N., Strohl, J. (2010). *Help Wanted, Projections of Jobs and Education Requirements through 2018.* Center on Education and the Workforce, Georgetown University. Washington, DC.

City University of New York City (2018). *Integrating Research into the Curriculum. http://www2.cuny.edu/research/student-resources/for-faculty/integrating-research-into-the-curriculum/.*

Community College of Baltimore County (2014). *Guide for Learning Outcomes Assessment.* Catonsville, MD.

Community College of Baltimore County (2018). *Guide for Credit and-Non-Credit certificate options.* http://www.ccbcmd.edu/Programs-and-Courses/Early-College-Access-Programs/Diploma-to-Career/Credit-and-Non-Credit-certificate-options.aspx.

European Union (2008). *Recommendation of the European Parliament and of the Council on the establishment of the European Qualifications Framework for Lifelong Learning.* Luxemburg.

Grubb, W. N. and Stasz, C. (1993). *Integrating academic and vocational education. Progress under the Carl Perkins Amendments of 1990.* Washington, DC.

Hunter, W.D. (2005). *Knowledge, skills, attitudes and experiences to become globally competent. A practical guide.* Ann Arbor, MI. Indiana Ivy Tech Community College System (2010). *Training and Certification Crosswalk.* www.ivytech.edu/prior-learning/CertcrosswalkSept10.pdf.

Jankowski, N. & Marshall, D. (2018). *Degrees that matter. Moving Higher Education to a learning system paradigm.* Sterling, VA.

Jenkins, D., Lahr, H., & Fink, J. (2017 b). *Implementing guided pathways: Early insights from AACC pathways colleges.* New York City, NY: Columbia University, Teachers College, Community College Research Center.

Jones, E. A. (2002). *Working in Partnership with Faculty to Transform Undergraduate Curricula.* https://doi.org/10.1002/ir.8

Keevy, J., Rein, V., Chakroun, B., Foster, L. (2018). Credentialing in the 21st century: looking beyond the event horizon. In: Oswald, F.J, Behrend, T., Foster, L. *Workforce Readiness and the Future of Work*. Routledge, New York City, NY.

King-Simms, S. (2007). *The Kentucky Bridges to Opportunity: Career Pathways Initiative.* Kentucky Community and Technical College System. Versailles, KY.

Lerman, R. (2009): *Training Tomorrow's Workforce: Community College and Apprenticeship As Collaborative Routes To Rewarding Careers.* Center for American Progress. Washington, DC.

Lumina Foundation (2014). *Degree Qualifications Profile.DQP 2.0.* Indianapolis, IN.

Lumina Foundation (2015). *Connecting Credentials. A beta version Credentials Framework.* Indianapolis, IN.

Lumina Foundation (2016). *Strategic Plan for 2017 to 2020.* Indianapolis, IN.

Maryland Higher Education Commission (2017). *Maryland state plan for postsecondary education.* Baltimore, MD. http://www.mhec.state.md.us/About/Documents/2017.2021%20Maryland%20State%20Plan%20for%20Higher%20Education.pdf.

Miami Dade Community College (2016). Right Signals Initiative Shining a Clearer Light on Credentials. *Miami Dade College, College Forum, June 2016, Volume 20, Number 3*. https://news.mdc.edu/press_release/miami-dade-college-to-participate-in-american-association-of-community-colleges-right-signals-initiative/).

Miami Dade Community College (2018). *Curriculum Development Manual.* Miami, FL.

Middle States Commission on Higher Education (2018). *Characteristics of excellence.* https://www.msche.org/standards/.

Montgomery Community College (2009). *College-wide Curriculum Manual.* Rockville, MD.

Montgomery Community College (2018). *Learning outcomes assessment directory.*

https://info.montgomerycollege.edu/offices/learning-outcomes-assessment/general-education-assessment.html.

Northern Virginia Community College (2017*). Student Learning Outcomes for NVCC's Degree-Awarding Programs and Select Certificates.* Annandale, VA.

Northern Virginia Community College (2018*). Dual Enrollment - Policies & Procedures Manual. C*atonsville, MD.

Povich, E.S. (2018). More Community Colleges Are Offering Bachelor's Degrees - And Four-Year Universities Aren't Happy About It. In: *The PEW Charitable Trusts. April 26*, 2018.

Rein, V. (2011). *US Associate Degrees – durchlässige Short Cycle Qualifikationen an der Schnittstelle beruflicher und akademischer Bildung.* In: BWP 2011/4. Bonn.

Rein, V. (2015a): Short Cycle Qualifikationen – Ihr Stellenwert im Bildungs- und Beschäftigungssystem in den USA und der EU. In: *Wissenschaftliche Diskussionspapiere*. Bonn.

Rein, V., Lerman, R. (2015b). Building a robust US work-based education and apprenticeship System at scale: Can lessons from Europe help? *AICGS Policy Report Nr. 62., John-Hopkins-University.*

Rein, V. (2016). *Making an American Credentials Framework. Intentions, Construction, Challenges and Perspectives.* https://bibb.academia.edu/VolkerRein.

Rein, V. (2017). Towards the compatibility of professional and scientific learning outcomes: Insights and options in the context of competence orientation. In: *International Journal for Research in Vocational Education and Training (IJRVET), Vol. 4, Issue 4, December 2017*, 325-345; http://www.ijrvet.net/index.php/IJRVET/article/view/267/72.

Rein, V. &. Majumdar, S. (2018). TVET and academic Education. A blurring distinction – new opportunities for the future. In: N. Papadakis & P. Kalogiannakis (ed.): *Crisis in Education*. Athens.

Tagg, J. (2003). *The learning paradigm college.* San Francisco, CA.

TUNING USA INDIANA COMMITTEE (2019). *Tuning USA Indiana final report.*

TUNING USA MINNESOTA COMMITTEE (2010). *Tuning USA Minnesota final report.*

US Department of Education (ED, 2005): *Education in the United States.* Washington, DC.

US Department of Education (1983). *A Nation At Risk: The Imperative for Educational*

Reform. Washington, DC.

US Department of Labor (USDOL): *Occupational Network.* Washington, DC. *www.onetonline.org/.*

Weick, K.E. (1976). Educational organizations as loosely coupled systems. In: *Administrative Science Quarterly, 21 (1),* 1-19.