

Introducing Multidisciplinary Micro-credentialing

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Introducing Multidisciplinary Micro-credentialing: Rethinking Learning and Development for Higher Education and Industry

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INVESTOR IN PEOPLE

*Silent supporters of our survival:
parents, siblings, spouses, offspring, and well-wishers*

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List of Abbreviations

Abbreviation	Definition
4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
AIB	Australian Institute of Building
AIB#	Australian Institute of Building Learning Outcome Number
AIQS	Australian Institute of Quantity Surveyors
AIQS#	Australian Institute of Quantity Surveyors Competency Standard Number
AIQSBS#	Australian Institute of Quantity Surveyors Basic Skill Learning Outcome Number
AMS	Accreditation Management System
AQF	Australian Qualifications Framework
BappSc	Bachelor of Applied Science
BIM	Building information Modelling
BS#	Basic Skill Learning Outcome Number
BSc	Bachelor of Science
CAANZ	Chartered Accountants of Australia & New Zealand
CAD	Computer-aided Design
CE	Continuing Education
CIOB	Chartered Institute of Building
CLO	Tertiary Institution Learning Outcome
CLO#	Tertiary Institution Learning Outcome Number
CM	Construction Management
CME	Construction Management (and Economics) Online Unit
CME#	Construction Management (and Economics) Online Unit Number
CPD	Continuous Professional Development
CPUs	Central Processing Units

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CRICOS	Commonwealth Register of Institutions and Courses for Overseas Students
EE	Executive Education
ePortfolios	electronic portfolios of academic work completed
EQUIS	European (Foundation for Management Development) Quality Improvement System
EUCO	European Council
F2F	Face-to-Face
FAQ	Frequently Asked Questions
GPA	Grade Point Average
HE	Higher Education
HR	Human Resources
HRTech	Human Resources Technology
IE	International Enrolments
IHL	Institutions of Higher Learning
IR	Industrial/Human Relations
ISCA	Institute of Singapore Chartered Accountants
ISCED	International Standard Classification of Education
ISCED	International Standard Classification of Education Qualifications
IT	Information Technology
L&D	Learning and Development
Mc	Micro-credentialing
MCAM	Micro-credential Attributes Model
Md	Multidisciplinary Perspectives
MdMc	Multidisciplinary Micro-credentialing
MicroCred	Micro-credentials
MMA	Model of MC Attributes
MOOC	Massive Open Online Courses
NACE	National Association of Colleges and Employers
OECD	Organisation for Economic Co-operation and Development
OHS	Occupational Health and Safety
OUA	Open University Australia
PD	Professional Development
QA	Quality Assurance

QILT	Quality Indicators for Learning and Teaching (Australia)
QS	Quacquarelli Symonds (QS) World University Rankings
RPL	Recognition of prior learning
SSG	SkillsFuture Singapore
TAFE	Technical and Further Education
TEQSA	Tertiary Education Quality and Standards Agency
THE	Times Higher Education World University Rankings
TRI	Travel Restricted International students
TVET	Tertiary Vocational Education and Training
ULO	Unit Learning Outcome
UNESCO	United Nations Educational, Scientific and Cultural Organization
VET	Vocational Education and Training
WSS	Workforce Singapore
WURI	World Universities with Real Impact

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About the Editors

Chamila Suasinghe, PhD, two decades ago, started his professional career as a chartered architect, and a few years later, he joined higher education academia as a clinical professional fellow. His full-fledged academic career was triggered by receiving a principal Fulbright scholarship to the USA in 2006. It extended into full-time teaching and research in many continents, including Asia, Europe, North America, and Australia. During this journey, he had first-hand experience in inter-cultural and inter-contextual nuances of higher education shift from service to servitude. Although he publishes on diverse topics, his work has dual implications: design activism and pedagogy innovation. As a Senior Fellow of Higher Education Academy UK and a Fellow of Higher Education Research and Development Society of Australasia, he consistently innovated thinking around adding value to higher education credentialing via upskilling credential seekers with enterprise skills. Apart from his academic role, he actively assists professional development activities for early career educators in the region as the Director of Higher Education Teaching and Learning Association for Oceania.

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Lorraine Ling is an Emeritus Professor at La Trobe University. She has worked as an academic in higher education for in excess of 30 years. Lorraine has held the role of Executive Dean of Education at La Trobe University and then at Victoria University in Australia. She has also served as Pro-Vice-Chancellor Associate – Strategic and Academic Transformation at Victoria University. Lorraine has researched and written extensively in the fields of teacher education, education policy, professional development in education, values in education, research methods and paradigms, and the changing nature of university work. Prior to her work in higher education Lorraine taught in primary, technical, and secondary schools in both the public and private sectors. She now serves on several academic boards and acts as a consultant in the area of education. Lorraine is currently co-authoring a book focussing on the *Future of Universities in Times of Crisis and Disruption*.

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Foreword

At one time in higher education, no thought was given to the matter of curriculum. Indeed, for some centuries, the concept of curriculum was absent, and even the concept of higher education for that matter. At the most, there was – from the late nineteenth century onwards – a sense of a syllabus, which was barely more than a shopping list of topics that reflected the lecturer’s scholarly interests. Matters hardly changed even when academics gave some of their time to systematic research, for the shopping list of topics simply grew in length, and the student experience – such as it was – was dominated by the problems that constituted the lecturer’s research activities. It was only with the coming of mass higher education that the concept of a curriculum started to form; and even then the actual English term ‘curriculum’ (or its equivalent in other languages) was seldom to be seen.

The link between the emergence of mass higher education and that of a curriculum was multiple, reflecting considerations of managerial efficiency and of educational goals. It is the latter set of considerations that are pertinent here. One key issue was that of breadth and depth: to what extent should the student be expected to go deeply into a single disciplinary or professional field and to what extent might that same student be expected to have a grasp of cognate fields and see her or his interests in a broad perspective? Another related, though slightly different, matter was that of analysis and synthesis: was the student to be equipped with the resources to identify the components of a problem and deal with them piecemeal and/or was the student to be furnished with complementary schemas so that she or he could stand back and take an overarching view of a matter, seeing it synoptically, with different elements having their place in large schemas?

As higher education systems have been formed in nations over recent decades, these issues have multiplied, especially as universities and other such institutions have come to be expected to engage with the wider society and the economy. In the process, the term ‘skills’ has become ubiquitous, to be joined even more recently by that of ‘employability’. Now, higher education is commonly seen as a vehicle by which the student can gain competences attuned to the evident needs of the labour market. In turn, the curriculum is stretched this way and that, not only inwards in extending the elements of knowledge and understanding as disciplines and their sub-disciplines multiply, but also outwards, as the demand for skills grows, with skills themselves reflecting an increasingly vast array of *practices of engagement* in the wider world, at varying levels of complexity and insight.

Against this background, it was inevitable that the curriculum would become disaggregated and divided into curricula units, which students could take separately. Modular programmes emerged, in which different combinations of modules could be put together to form personal study programmes. And, just recently, this impetus to opt for a higher education composed of discrete units has accelerated with the idea of micro-credentials.

The title of this present book, *Introducing Multidisciplinary Micro-credentialing: Rethinking Learning and Development for Higher Education and Industry*, intimates some of the influences that are prompting this current surge in a unitised curriculum. They include a sense that a purely discipline-based approach is no longer adequate in a world that is increasingly inter-connected, that higher education has to serve many purposes to include but to range far wider than the educational dimension, and that the development of students as persons should be taken on board. So considered, micro-credentialing may be considered to be a response to the multiple challenges now faced by a higher education curriculum.

It is worth drawing out this context so as to gain a sense of just what a radical approach micro-credentialing presents. If the world is in motion, is fragmented, is effervescent, and is complex such that it bears qualities of unpredictable emergence, then the higher education curriculum has to be entirely rethought. It is apparent that curricula that are confined within disciplines, with the student journey fixed within such boundaries, may be actually injurious. Such curricula *discipline* the structuring of human beings in ways that are entirely inappropriate to an inter-connected world in rapid and uncertain motion.

The curriculum issue, accordingly, under the newly presenting circumstances, is that of devising vehicles of encounter that encourage not only openness in inquiry but in the development of the sheer being of the student. What is called for are graduates who are able to contribute positively to a world where nothing – no concept, no framework, no practice, no system, and no institution – should be taken for granted. Micro-credentialing may, accordingly, be understood as a means of enabling students not just to form a welter of skills in different domains but also to tolerate being a person in a fragmented world.

This book represents a hugely valuable attempt to explore these matters and it opens doors to yet further inquiries. For example, might the multi-disciplinarity of micro-credentialing open not only to *inter*-disciplinarity – where a student might be required to handle several disciplines at once – but also to *trans*disciplinarity, where the student might be expected to address large issues drawn from the world and so transcend the (epistemological) framings of disciplines and be situated much more in the (ontological) messes of the world? Might micro-credentialing extend to the student's *lifeworld* and permit the student to bring into her or his university experience their *lifewide* learning acquired in all manner of settings beyond the university, in personal life and in the community? Might micro-credentialing offer new vehicles for gaining cognitive and experiential resources for *critiquing* the world (simply not found within single disciplinary frameworks)?

Introducing Multidisciplinary Micro-credentialing should therefore be recognised as a radical manifesto. The world is dissolving barriers and is requiring that

its people take on permanently disrupted modes of sheer being; and higher education has to find completely new curriculum arrangements so as to be adequate to this world. In this world, the very terms ‘progression’, ‘coherence’, ‘development’, and even ‘becoming’ are now problematic, while interconnectedness, cross-pollination, networks, and transcendence must surely hold the attention of those with interests in the shaping and the proper development of higher education. Just these matters are posed by the publication of this book.

Ronald Barnett
London, February 2023

Preface

Various roles I played over two decades in higher education and industry podiums made me wonder why learning is so fragile. Why is it among the most significant synonyms for life's greatest gamble? Why does 'has it' or 'lack it' strongly affect *who we are* at the most pivotal points in our lives? Why does learning need validation to align our realities with someone else's? What makes higher education culture different from culture of other institutional learning? Most importantly, why does creative learning via critical thinking still strive to survive in the rapidly shifting learning landscape? Introspectively, the pandemic learning shift made it easier for me to scrutinise these individually as well as collectively.

I started micro-credentialing as a leeway to rethink self-sufficiency while doing prep work for my executive leadership training at Harvard Kenney School. Due to the time difference between Boston and Perth, the long sleepless hours I spent online made me relentlessly reflect on how much learning is too much. Is it meaningfully lasting when you consume learning where you feel empty and hungry for something old, something new, something borrowed, and something blue? Later on, it dawned on me that something old and something new was re-skilling and upskilling, and something new, something borrowed as research and development. Along the way, I bonded with a highly seasoned and curious group of higher education executives from global higher Ed brands who were also positively charged with the desire to get into the depths of delirious higher education-job market mismatch. Initially, it started as a research grant proposal with an option to extend as an academia-industry manifesto to negotiate graduate competencies without all the trimmings. Beena was the one who pushed it all the way through from the grant to the book.

Perhaps, every innovative solution stems from constraints under dire circumstances. Micro-credentialing is that sizeable and affordable portion for learners, providers, and employers could unhesitatingly take on, particularly during uncertain times when learning is surviving. This is one of the reasons the book follows Q&A (Questions and Answers) format instead of FAQ (Frequently Answered Questions) format, where an educated guess is made on the gaps in existing answers. Also, this is a mere point of departure rather than an end of a journey.

What holds for the future is more challenging, requiring clarity on the nuts and bolts of the academia-industry manifesto outlined in this book.



Chamila Subasinghe,
Manchester, UK
10 April 2023

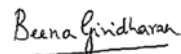
This book on Micro-credentialing brings to fruition many months of intense engagement: with our chapter contributors, peer-reviewers, publishers, and the wider higher education (HE) community. Along the way, I had the opportunity to reinforce my belief in the way Multi-disciplinary Micro-credentialing (MdMC) is set to progress as a lifelong learning opportunity for current and future workplace employees to engage in building expertise in their own field of work with recognised awards/credentials. It is undeniably a game changer when it comes to advancing career opportunities for individuals focussed on gaining momentum in their careers. We hope that academics, industry partners, and policymakers will interact with the book chapters reading through academic and industry perspectives of MdMc and gain a better understanding of the importance of MdMc in uplifting generational workforces to come.

The idea for the book started as (Cham mentions above) an education grant, followed by the sequential process of research with academic teams, for me gaining a first-hand understanding as a facilitator and course organiser on how MdMc is perceived by participants who engaged in completing short courses at the Malaysian campus (during the pandemic via remote learning) and academic team presentations at HE conferences which allowed for peer feedback and reflection.

The pandemic brought to the forefront that innovative pedagogical models of ‘blended learning’ and ‘remote learning’ could all be achieved in mainstream HE learning and teaching with consensus from all stakeholders. This circuitously propelled the trajectory of micro-credentialing as well. Training and continuous upskilling and re-skilling were adopted online and delivered with rigour and expertise, and learning in ‘byte size segments’ could indeed occur online or in person.

It is delightful that Emeritus Professor Ronald Barnett (Institute of Education, University of London), with whom I have had the privilege of working on projects since 2003, has honoured us by writing the foreword. Discussions with him on MdMC added to the rigour and imperative to engage deeply with the topic. We are profoundly indebted to him for his most insightful foreword.

We hope that the book will add to the scholarship and understanding of the role of MdMc in post-secondary education and will be recognised as a valuable resource for all HE stakeholders: academics, industry partners, policymakers, and the broader HE community.



Beena Giridharan
Miri, Malaysia
11 April 2023

Acknowledgements

Initially started as a grant proposal, this book is a clear testimony of the generosity of many individuals and institutions. A few of the original multidisciplinary micro-credentialing crew had to leave the team due to life expectancies and the cruelty of Covid.

We particularly thank the chapter contributors and their institutions for their support and patience. This book project couldn't have been more difficult for them, with the constant challenges in both academia and industry with explosive changes that happened during the last few years.

We owe Emeritus Professor Ronald Barnett at the Institute of Education, University of London, a great vote of thanks for keeping it authentic and relevant for all of us. His foreword adds value to the core criteria we attempted to establish in this book.

The Emerald team was quick and compassionate, and they didn't need any additional convincing in conveying relapses that happened quite sporadically in the process.

Introduction

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Chapter 1

Introducing Multidisciplinary Micro-credentialing: Rethinking Learning and Development for Higher Education and Industry

Chamila Subasinghe and Beena Giridharan

This book is neither introduction to Multidisciplinary Micro-credentialing (MdMc) nor about its increasing vitality in the current Higher Education (HE) Learning and Development (L&D) space. Unlike an introduction, *introducing* is about assessing potential problems, evaluating options, and planning accordingly. Negotiated through a systematic review of current credentialing models, *Introducing MdMc* offers an Md structure to Mc to propose a HE-industry manifesto. By introducing MdMc, we hope that industry and HE could forge a practical methodology to respond faster and better each time without reinventing the credentialing wheel. Multidisciplinary presented in this book is a safe route to avoid discipline-based divergences that often manifest in cross-disciplinary, interdisciplinary, and transdisciplinary discourses that perhaps have the potential to halt possible collaborations. Multidisciplinary presented in this book embraces a much simpler attitude to acknowledge discipline boundaries while recognising potential proximities of disciplines to merge and cross borders. Hence, this is an Md response to rethink HE in the absence of systematic approaches to bring diverse discipline groups together to communicate effectively. In a historically volatile transition point of HE, it discourses exemplary examples with daring acts of innovation in order to build a methodology that could easily be adaptable to elevate alternative credentialing models and modes. Even though a significant body of scholarship substantiates the advantages of crossbreeds between humanities and social sciences with engineering and technology, there is not much evidence on how learning content and learning perspectives could crossbreed into a holistic, transdisciplinary learning experience (Exter et al., n.d.). Also, a pulse check on discipline degrees for their changed status quo is vital to ensure sustainable futures for stakeholders in all HE sectors. Due to inherent inhabitations of discipline based HE on MdMc,

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communication among stakeholders becomes challenging, with a reduced sense of self-sufficiency and, thus, course crossbreed lags. Consequently, credentialing initiatives hardly progress through further testing. Hence, MdMc aims to establish a HE-industry framework to augment new knowledge hybrids where disciplines could identify adaptable Md links and intersections towards self-sufficiency for learners in various learning cycles and phases.

Focus

Instead of censuring the current concerns and pre-existing HE conditions, this book acknowledges that we currently are in well-defined circumstances to rethink L&D due to unprecedented adjustments required to accommodate the rapidly rising pandemic paradigm. Therefore, the *learning component* of this book directly deals with emerging HE trends that seize opportunities of the time to test innovative ways of learning to lessen the distance between the learner and the provider. Focussing on different challenges of both people (a) on the job who need specific competencies to continue to grow as well as (b) who are in the job market where most jobs demand unfamiliar or adjustable competencies that typically are not offered through conventional degree programmes. Focussing on access to HE through alternative credentialing systems, the *development component* of this book seeks to seize opportunities to level the inequalities among various HE platforms. It takes a serious note on the makeup of future employment as it is an inevitable internet of things and the interests of systems (Alam & Benaida, 2020; Bandara & Ioras, 2016). This is a direct result of *internet globalisation* aggravated by the pseudo-fourth industrial revolution (4IR) and the pandemic world (Chaka, 2023; Whalley et al., 2021). Although MdMc has been identified as a possible partial leveller of inequalities, it never has been obtained for its regenerative possibilities to build adjustable competencies through potential L&D apparatus. In times of quick competencies over conventional degrees in demand, what makes Mc compelling is its ability to marry multiple musts without being affected by lengthy prequalification processes, including prerequisites and prior performances. One of the MdMc pillars, geospatially unconstrained education, primarily acknowledges that the roots of Mc sit in Md content, design, and delivery. Therefore, Mc mechanism needs to be profoundly powered by core disciplinary areas such as education, information and communication technology, and the design sciences by the nature of its necessity (Naidu, 2019).

Realising the reachability and reliability of MdMc during uncertain times, universities have begun partnering with professional educational companies like Edex and Coursera to build qualifications like Micro-masters and accept them as admission equivalents or partial credits towards Masters degrees (Diaz et al., 2022). Major HE brands initiated an integrated model of MdMc research on their own micro-credentialing provisions. For example, Columbia University researchers found that students who had completed micro-credentials at their university reported learning something new and consequently improved performance in their respective jobs (Hollands, n.d.). In addition to the advantages of working while learning, access to education

unbundled for peer groups in similar situations offers to yield better benefits of modularity, stackability, and peer exchange of Mc for learners (Wong et al., 2020). Micro-credentials may prove that they are viable alternatives to degrees and create exciting opportunities for employees looking to level their skills and knowledge in the workplace (Marshall & Marshall, 2018).

As they demonstrate skills, knowledge, and/or experience in a given subject area or capability, the paybacks of micro-credentials are enormous. Although micro-credentials tend to have narrower scopes than conventional qualifications like diplomas or degrees, they provide clear paths towards career progressions and upskilling towards potentially stackable competencies (Wilson & Hay, 2018). As the pandemic continues to drive the global economy to a diminished power, many new entrants to HE, including employees and job seekers, may well consider reskilling and upskilling via Mc as sustainable solutions (Kiiskilä et al., 2022). Short online or physical courses make MdMc more accessible and deployable in time to launch oneself when local economies return to reactivation modes. The need is to cater to a more marketable credential pool constantly reshaping the post-pandemic job landscape. However, employing graduates from Mc programmes had not been equated to increased motivation or engagement, thus, long-term sustainability (Tomić et al., 2019). Also, how to transfer Mc into official accreditation and qualification frameworks in order to deliver expected equities and wider recognition in professional settings is yet to be established (Wong et al., 2020). There is, however, scant literature to date that report on positive learner attitudes towards Mc and badging. However, it is evident that the shifting paradigm of credentialing is leaning towards creating an industry-necessitated and learner-centred experience. This is a significant shift from the earlier learner experience that furnished individualised and differentiated approaches that support curriculum completion for students progressing at a varied pace (Fig. 1.1).

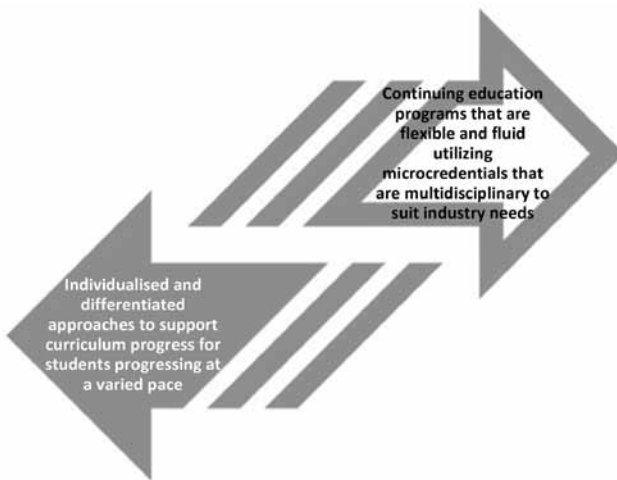


Fig. 1.1. Shifts in Learning Models.

Framework

This book adopts hybrid of content and discourse analysis framework to demonstrate the degree of fluidity between different credentialing models and job sectors. We believe that it best narrates self-sufficiency-related benefits that could trigger robust academia–industry partnerships, which is one of the core intentions of this book. Based on Md rhetorics on rapidly deployable knowledge bases, cases, and precedents, this book proposes a methodology for multisector employability and a better synthesis of learning and working: a survey of HE to identify new knowledge hybrids. The proposed methodology will be built on existing Mc models based on their capacity to meet across disciplines and different industry sectors. Consequently, it identifies gaps, laps, and intersections of the existing models that require further interrogation to evaluate stakeholder mobility. Demonstrated through examples, the essentials of mobilisation further unbundle barriers and carriers for L&D opportunities through theory piloting (learning) and subsequent theory testing (development). The follow-up editions of this book will demonstrate potential hybridised credentialing models based on their capacity to create avenues for new knowledge content and stakeholder engagement programmes towards a sustainable HE and industry manifesto. These editions will further detail how to harvest Md crossbreeds to offer professional currency towards self-sufficiency.

Demonstrated through systematic literature reviews, meta-analyses, and mixed-methods research, each book section unfolds a series of strategies to argue MdMc's disposition. For example, the first section is a systematic literature review to demonstrate the poverty of the current status quo that shows very little or no investigations into why Md attempts are not made to create interdisciplinary endeavours. It scrutinises four major databases on peer-reviewed articles, indexed conference proceedings, books by academic publishers, consultancy reports of accreditation bodies, review reports of governmental and non-governmental organisations, and professional practices via a deductive process. This was roped in through various disciplines and industry champions in both basic and applied sciences, including but not limited to educational psychology, construction sciences and management, business and law, and educational psychology and social inquiry. The respective sections employ a range of multi-method to mixed methods studies to demonstrate interdisciplinary opportunities that emerged from various Mc materialisations such as MOOCs, nano-degrees, digital badging, etc.

Instead of being parochially prescriptive, this book enacts an ongoing working programme between HE and industry to evaluate and prepare for future employability through L&D. This is one of the reasons that the authors are academics cum clinicians or clinical fellows instead of career academics or strict practitioners. Hence this book is a mutually agreed framework to let the proposed methodology evolve. Another added advantage of this book being an academia–industry manifesto is its work-in-progress nature that fosters continuous dialogue. This would systemise the academia and industry negotiations as it simplifies evaluation and innovation criteria for the methodology via minimising trimmings.

Formwork

The structure of this book is moulded around five pillars of inquiry: Why, Where, What, How, and When. Thus the structural formwork takes the frequently asked questions (FAQ) format. The point of difference between the FAQ structure of this book and the general FAQ format is its evolving questions unanswered or riposted. We use unanswered and riposted questions to shape and forecast MdMc in credentialing future of HE. Instead of a prescriptive analysis leading to a course of action or strategy, we used a discursive narrative to allow MdMc to take its logical form. Beginning with ‘Why’, each section feeds into the next, allowing incomplete whole or five pillars to become a complete whole. ‘Why’ inquires ‘why inclusivity is not enough’, using self-sufficiency of international students as an example in globalised contemporary HE brands. ‘Where’ examines how digital space has transformed credentialing models to be more agile to fluctuations in the pandemic world. It uses real-world examples of extenuating circumstances where Mc had stepped in to rescue conventional credentialing when HE and industry caught up in a crossfire between the pandemic realities and ever-changing skill demands. How online L&D could relieve casualties of this crossfire and foster sustainability incentives such as self-sufficiency is being discussed. Intending to design a robust university-industry manifesto, ‘What’ investigates the latest and leading-edge case studies and precedents based on the inherent qualities of skill gaps and consequent industry reactions to them. ‘When’ literally refers to redefined rhythm of lives of learners through time terminologies. Particularly, it scrutinises the demands of the uncertain times that lifted the barriers to digitisation and shifted the focus to a student-centricity paradigm. The overall objective of this book is to discuss the ways and means of MdMc shaping into a circular system from a rigid discipline-based structure as conceptualised in [Fig. 1.2](#).

Setting the backdrop or *WHY* in Section 1, Subasinghe and Cooper-Cooke propose rigour criteria for Md, Mc for self-sufficiency. To demonstrate the indispensability of Mc, the authors use a distinct HE consumer sector, International Enrolments or Students (IE), who seek global job mobilisation via sustainable credentials. The core question they raise is, *can IEs manage time spent wisely and profitably (self-sufficiency) via collecting demand-driven credentials (MC) when employers invest less in training and more in innovating?* In order to examine limitations for Mc, this study ascertains why (a) communication among MdMc stakeholders is so restrictive, (b) a sense of self-sufficiency is poor among learners, and (c) course crossbreeds are rare? Systematically, the study sets a series of parameters towards a methodology based on Md content analysis. This meta-analysis of MdMc-related content shows very little or no investigations into how individual pieces of MdMc interplay. Furthermore, it reveals that MdMc needs three kinds of Mc and industry connections to yield its employability objectives. Hence, the discourse uses a diagrammatised and accompanied textual analysis to demonstrate how fluidity between credentials and careers could influence self-sufficiency. The resulting MdMc rigour model presents avenues for new content creation and L&D possibilities leading to a potential HE-industry manifesto. The chapter concludes that an MdMc model that could offer a rapid and dynamic process of epistemic,



Fig. 1.2. MdMc Aspires to Become a Circular System to Offer Competency-based Credentials. *Source:* Subasinghe (2021).

accessibility, and instructional rigour checks to achieve professional currency towards self-sufficiency for IEs. This matrix provides an L&D framework, as Gish-Lieberman et al. (2021) theorised for Mc; it aligns learning tasks with developmental goals in a meaningful way, engaging learners as leaders immersed in intrinsic and extrinsic motivators through self-regulated learning. Irrespective of a plethora of evidence that supports Mc, however, this chapter is cautious about the kind of learners who could get the best out of this as it is a better fit for motivated, self-directed, and self-regulated learners. Otherwise, easy access to Mc would overwhelm many students who may not have vital learning skills to sign up for micro-credentials and to achieve promised skills and competencies within a short span of time. This could even result in endless and massive in and out of Mc courses leading Mc to lose its credibility among employers to take such credentialing seriously.

Giridharan's chapter in Section 2 discourses geospatially of Mc to define *WHERE*. In the process, the author puts forward geospatially critical keywords such as knowledge economies and digital futures. The author deciphers knowledge