Book review: Foundation of digital badges and micro-credentials demonstrating and recognizing knowledge and competencies

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Keywords	Abstract
Digital Badges, Micro-Credential, Learning Environments, Competence	Foundation of Digital Badges and Micro-Credentials: Demonstrating and Recognizing Knowledge and Competencies is edited by, by D. Ifenthaler, N. Bellin-Mularski, D. K. Mah in 2016 consists of 28 chapters. The potential benefits of adopting digital badges in various types of education, including formal, non-formal, and informal contexts, are discussed in this book. It addresses technical design issues such as organizational needs, learning and instructional design, and research on the theoretical and empirical elements of employing digital badges. Case studies in the book demonstrate how digital badges are now being utilized to inspire and instruct learners in K-12 schools, higher education institutions, workplace training programs, and other continuing education contexts.

1. Introduction
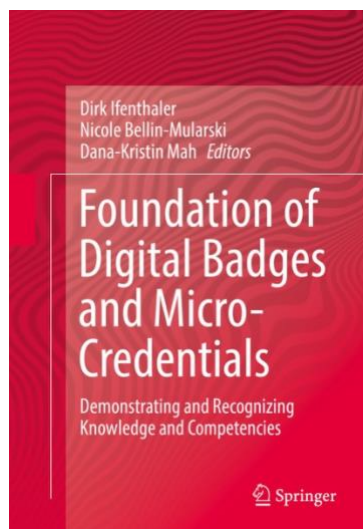
Foundation of Digital Badges and Micro-Credentials: Demonstrating and Recognizing Knowledge and Competencies is edited by, by D. Ifenthaler, N. Bellin-Mularski, D. K. Mah in 2016 consists of 28 chapters. The book has 530 pages. It also has five parts. The first part of the book is entitled *Theoretical Foundation of Digital Badges*. This part covered the historical context, factors influencing motivation, the open digital badges philosophy, as well as drivers, opportunities, and difficulties. The second part of the book is entitled *Technological Frameworks and Implementation*. Adopting digital badges, designing and developing digital badges, role of digital badges, implementing badging system were handled in this part. The third part of the book is entitled *Learning and Instructional Design Considerations*. Theoretical framework for designing digital badges, design strategies, digital portfolio and curated learning journey were handled in this part. The fourth part of the book is entitled *Case Studies: Practices and Experience*. This part dealt with the use of digital badges for professional development, the legitimacy of the badge, how students view them, how to use them with teachers, gamified learning environments, and various contexts. The fifth part of the book is entitled Epilogue. Different perspectives on digital badges and further research suggestions were detailed in this part.

2. Overview of the Book

The first chapter of the book explores the evolution of the usage of symbols to represent achievements, knowledge, abilities, and competences, such as badges and micro-credentials. It also addresses the motivational features, difficulties, and limitations of digital badges and micro-credentials, as well as their historical context. The chapter

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also looks at the theoretical foundations and human theories that justify badging, as well as providing empirical evidence of digital badge usage. It also addresses the popularity of traditional badging in many industries as well as the limited usage of digital badging in particular domains, including industry, business, sports, education, entertainment, and peer group programs. In addition, the chapter addresses the impact of technology on badging and the notion of disruptive innovation in the light of recent technological advancements and the current and future state of digital badging.

The book's second chapter examines the potential of open digital badges as an educational technology tool that can revolutionize curriculum, job acquisition, and workforce credentialing. It implies that the openness given by learning data, evaluations, and expert validation made available through social media may be well-suited for addressing crucial educational concerns. The chapter also addresses concerns regarding the responsibilities of instructors, credential providers, and learning management systems in the contexts of individuals and communities, as well as data aggregation. The topic of digital badges addresses a number of epistemological issues, such as challenges to traditional educational motivation, the compatibility of Platonic and current educational models, and the potential of badges to symbolize postmodern credentialing systems. By understanding how badges can transform learning environments and illustrating how badges can enable transformation in education, the chapter posits that an epistemological philosophy of badges can shift educators' thinking and drive innovation.

The book's third chapter emphasizes the need for higher education to constantly innovate in order to meet workforce developments and labor market demands. It investigates the role of micro-credentials and open badges in locating, measuring, and validating learning inside academia. The chapter also explores the capabilities of technologies for mapping learning goals and graduate outcomes at various degrees of granularity, as well as the significance of connecting learning, life, and work practices for ongoing professional development and advancement. However, the chapter cautions against using competency-based approaches to foster higher-order professional capacities that include information synthesis, abstract thinking, and the construction of professional dispositions and identities through continual reflective processes. Curriculum designs that connect methods of knowing, being, doing, and valuing with practical ways of being in the world, according to the chapter, are vital for life and professional practices. Finally, while admitting the challenges of educating professionals for practice, the chapter recommends ways to reflect on current approaches to digital badges and micro-credentialing.

The fourth chapter of the book addresses how digital badges have the potential to disrupt higher education by providing a transparent and information-rich method of recognizing and presenting learning achievements. Digital badges can be linked directly to standards met, badge issuers, badge requirements, and evidence of the ability or aptitude indicated by the badge. Several motivations motivate institutions to investigate employing digital badges, including the requirement for lifelong learning accreditation and individualized learning techniques. Digital badges can provide learners with more flexible and cost-effective courses, as well as a more granular manner of identifying progress and successes. They can also provide students with individualized learning paths and businesses with clarity about skill sets. However, digital badges are not without obstacles and are not uniformly accepted, with institutions in the industry differing in strategy and enabling structures. This chapter investigates the motivations, benefits, and challenges of adopting digital badges, taking into account their historical roots and influences in the context of specific use cases and developing instances.

The fifth chapter of the book explores the notion that credentials, such as micro-credentials and badges, reflect a public pledge to help make the world a better place. However, defining and evaluating the fulfillment of this promise can be difficult. The chapter investigates how the public promise of micro-credentials might be incorporated into the credentialing process, as well as evaluation approaches and strategies for assessing the promise's fulfillment.

The book's sixth chapter explores open digital badges as expressions of trust used to validate a person's identity and talents. The promise of badges is seen to be achieved when they are used as credentials, but research reveals that this requires them to be valued by college admissions and employers. The chapter examines open badge infrastructure (OBI) technical standards as well as the difficulty of boosting the perceived value of badges through credential marketplaces and the reputation economy. The chapter also delves into alternative currencies, the role

of credentials and credential markets in fostering communal belief in badges, and the significance of metadata in the scaling of badges as a type of reputation.

The book's seventh chapter examines the evolution of digital learning, teaching, and assessment tools and philosophies in higher education. Through a transferable technological framework, digital badges are introduced as a tool that may bring visibility and transparency to learning, reveal significant details about learning for all stakeholders, and acknowledge skills, experience, and knowledge. The potential for employing digital badges are investigated at many stages of learning, including pre-learning, while learning, and lifetime learning. The use of badges as competency credentials and as a bridge from casual to formal learning can alter higher education teaching, learning, and evaluation. The chapter also mentions an Australian national study of micro-credentialing and describes some of the instructional approaches and outcomes of using badges in learning, such as designing badges for learning processes, integrating badges into e-portfolio practices, promoting learner autonomy and self-regulation, and using badges as symbols of accomplishment.

The book's eighth chapter examines the difficulty of selecting a suitable badging platform to support a specific badging system. The authors began by reviewing relevant literature and resources before developing scenarios to depict common types of interaction with badging systems. They identified functional needs and constructed comparison criteria for badging platforms based on this information, including supported scenarios, a range of badging capabilities, and supported badging and teaching/learning techniques. They then used these criteria to examine and compare six selected badging platforms, discovering disparities in functionality and recommended practices among the platforms. The findings of this investigation provide a realistic view of these platforms' capabilities.

The book's ninth chapter examines the usage of digital badges at a university, including efforts to create badging systems at the individual course and program levels. The relevance of an educational support structure, as well as faculty understanding and participation, in expanding adoption is underlined. The possible effects of badge practices on outreach, marketing, and the institution's curriculum are also examined, as are advice for starting and growing badge programs within a university setting. Digital badges are described as micro-credentials that can be granted by businesses and professional organizations and accessed and used flexibly by learners as an alternative to traditional transcripts and diplomas.

The tenth chapter of the book addresses digital badge instructional design issues, emphasizing the unique potential and challenges of building instructional badges, as well as the significance of prior preparation and planning. Purdue introduces Passport, a system that integrates learning management and content management aspects with mastery-based advancement through instructional assignments, extra multimedia resources, and a semi-gamified interface. The chapter takes you on a tour of Passport as an educational tool and offers tips on how to create effective learning experiences inside this type of digital-badge-based learning system.

The book's eleventh chapter examines the need of learning and development in today's fast-paced corporate climate, as well as the need for organizations to go through a learning transformation in order to create a learning culture in the workplace. In engaging learning designs, the author proposes that effective next-generation workplace learning should integrate components of informal learning, formal training, knowledge sharing and collaboration, social learning, coaching and mentoring, and serious games. These new learning architectures are held together by badge systems, which make the learning process quick, interesting, and effective. Using case studies of digital badges in the workplace, the chapter also examines how to establish a badging system in the workplace and make it a success through smart rollout strategy and change management.

The book's twelfth chapter covers the significance of transparency, confidence, and trust in the badging process in order for badges to be accepted. The endorsement concept is proposed to give conceptual and technological infrastructure for third parties to publicly recognize the significance of badges. The Open Badges Standard includes an endorsement specification that enables for the endorsement of badge classes, issuers, or claims. Endorsement is meant to foster the formation of trust networks and relationships among stakeholders from many areas, including education, government, standards agencies, employers, and industry associations. It also assists badge earners in understanding the value of badges in achieving their goals, badge issuers in receiving external validation, and

educators, employers, and other consumers in determining which badges are most suited in their situations. Endorsement facilitates validation in open credential ecosystems and encourages further badge opportunities.

The thirteenth chapter of the book examines the use of badging in higher education faculty development, including how to demonstrate accomplishments, inspire progress, and track faculty development efforts. Badging, according to the authors, can be linked to crucial components of the academic job, such as rank, tenure, merit raises, and university and community engagement, and it can be paired with mentorship and peer review to allow for more specialized and "just-in-time" training. They also discuss the usage of micro-credentialing systems in education and offer a look at four contemporary badging platforms. The authors discuss ideas for creating and implementing badging to empower and encourage teachers in the chapter, which focuses on preparing a university to employ a badging system related to faculty development and mentoring.

The fourteenth chapter of the book examines digital badges as a trend in education technology and granular micro-credentials as a new kind of evaluation. The authors contend that there is a challenge with properly capturing and organising distributed learning across diverse domains and settings, and they want to address this issue by developing a framework for constructing digital badge systems. The chapter provides a variety of relevant theories that could help with the creation of digital badges, such as self-regulated learning, goal setting, and motivating aspects found in digital games, and concludes with a comprehensive framework for the design and implementation of digital badge systems.

The book's fifteenth chapter explores the function of digital badges and micro-credentials in displaying community participation and productivity, as well as how gaining these badges and credentials may improve self-achievement or self-perception. Digital badges and micro-credentials demonstrate that a person has met a set of objectives and can be used as alternative assessments that focus on extrinsic or intrinsic motivation to encourage individual or group performance and learning outcomes. Digital badges and micro-credentials are valuable documentation of educational achievements or workplace efficiency, and they are used by a variety of organizations, including universities and businesses, to recognize improved skills, knowledge, and accomplishments in education and workplace development. Adoption factors based on the idea of diffusion of innovation should be considered to boost the use of digital badges and micro-credentials in businesses. Digital badges and micro-credentials can be exhibited so that others can observe an individual's accomplishments, successes, and productivity.

The book's sixteenth chapter discusses the importance of ongoing learning for K-12 educators in the United States, as well as the limitations of current methods for measuring this learning, such as "seat time" in professional development (PD) sessions without regard for quantity or quality of learning, classroom implementation, or learning outcomes. The authors contend that digital badges, a type of micro-credentialing, provide a chance to more correctly and graphically document professional development and go beyond the seat time paradigm. Digital badges can effectively communicate a PD session's learning material and track different forms of learning over time, as well as encourage PD workshop presenters and attendees to produce value from PD sessions and relate concepts to real-world implementation.

As technology for issuing, curating, massifying, and automating badges improves, the seventeenth chapter of the book highlights the significance of developing a framework for digital badges. To retain currency and relevance for learners, the authors argue that badges must be contextualized in respect to other badges as part of sets and in reference to other sets. To make badges more relevant and compelling, the chapter proposes designing for depth as well as height, allowing for the understanding and consideration of badge linkages, paths, and connections. To draw on comparable design experience, the chapter examines the emergence of badging on video game consoles and its roots in virtual identity profiles in tabletop gaming.

The book's eighteenth chapter examines the usage of achievements in commercial video game design, as well as research on specific learning games meant to test the usefulness of badges on learner characteristics including performance and motivation. The authors discuss psychology and design elements, such as the links between games research and learner motivation, the implications for measurement and assessment, and evaluation methodologies. The chapter also examines best practices for building badges based on game accomplishment research and provides an overview of achievement systems within popular gaming settings. The writers analyze the use of badges in the video game Fallout Shelter and provide warning notes on the potential negative impacts of

awards when taken too far or when they overshadow other aspects of a learning area. The chapter finishes by suggesting future study areas for investigating the links between video game achievements and digital badges.

The book's nineteenth chapter explores the use of digital badges as a component of digital portfolios and recommends two digital design patterns for integrating badges with portfolios. Digital portfolios are collections of digital artifacts, such as work samples and skill and accomplishment records, that can be used to demonstrate learning achievements, record a learning process, or exhibit talents. Digital badges, in the form of badge collections, can be used as part of digital portfolios or as standalone portfolios. Based on an analysis of design narratives from three selected projects that employ badges in various ways, this chapter proposes design patterns for incorporating badges into digital portfolios. The design patterns give guidelines for instructional designers as well as solutions to typical challenges in building digital badges as part of digital portfolios.

The authors investigate the usage of digital badges and digital portfolios in educational contexts as instruments to foster creativity and demonstrate skills and knowledge in the twentieth chapter. They suggest that when integrated into the design and implementation of the learning process, digital badges, which can signify achievement and transmit aspects of a learner's identity, can add value to the learning experience. The authors also talk on the value of creativity in learning and how digital portfolios, which are collections of digital artifacts like work samples and records of abilities and accomplishments, can help learners demonstrate their growth and learning journey. The authors propose that immersive design and design thinking approaches, which are centered on the learner and entail experiential, creative problem solving, can be utilized to create authentic contextual portfolio strategies that allow for creativity to emerge.

The book's twenty-first chapter provides a study of the usage of digital badges in an online teacher professional development program. According to the survey, while most instructors recognized the significance of the badges as credentials for external audiences, they received no formal recognition from their schools or districts. According to the study, a badge system might be utilized to create professional development events that are linked to a discipline-specific system that assists teachers in developing knowledge and instructional methods mastery. The findings have significance for the development of badge systems that provide answers to difficult educational problems.

The book's twenty-second chapter analyzes three scenarios of digital badge use and investigates the conditions under which they are beneficial as an assessment tool. It covers the conclusions of the Design Principles Documentation project, which looked into the dynamic applications of digital badges. The chapter also goes over the numerous challenges to consider when using digital badges for evaluation.

The authors outline the process of producing a set of micro-credentials, or small, specialized credentials, for instructional designers and developers in the book's twenty-third chapter. These micro-credentials are founded on nine principles that are applicable to the work of instructional designers and developers regardless of the sort of learning solution they are developing. The authors detail the process of creating the micro-credential series and developing governance and administrative processes for badge issuance, as well as the development of a practice analysis and the results of a criticality analysis. The writers also explore the marketing of the micro-credentials and the project's future directions. The micro-credentials were created using Hale's 12-step approach, which is a commonly used method for generating and developing evidence-based credentials.

The Sheffield Business School at Sheffield Hallam University presented digital badges as a replacement for paper certificates to recognize students' engagement in a peer representative scheme in the twenty-fourth chapter of the book. The survey-based research discovered that university students largely perceived digital badges as a way to market their accomplishments to possible employers, but further research is needed to identify how much weight potential employers place on badges as evidence of achievement. The chapter also goes through the technological decisions that were made when implementing digital badges, as well as how they might promote and encourage involvement in co-curricular and other informal learning activities.

The authors of the twenty-fifth chapter of the book investigate how digital badges might be utilized as a form of motivation within enterprises. They investigate the relationship between motivation and digital badges using three psychology theories: humanistic, behavioral, and Gestalt. The authors claim that including digital badges, leaderboards, and points into an organization's human resource development strategy can influence behaviors and

result in beneficial organizational improvements. They explore the use of digital badges, leaderboards, and points in the context of internal gamification, which uses game elements to inspire employees and foster teamwork.

The book's twenty-sixth chapter examines the usage of digital badges in higher education, which is a new trend being investigated as a way to demonstrate accomplishments and serve as a motivator for academics seeking improvement. Badging can also be linked to critical components of academic roles such as rank, tenure, and merit raises, and it can be used to assess the effectiveness of faculty development efforts. Digital badges can also be used to provide "just-in-time" training by being linked to mentoring and peer review. Badges can be utilized in both academic and nonacademic settings in higher education, and several platforms are available for building a badging system. The usage of badges in higher education can empower and encourage instructors while also serving as an alternate assessment method. In some circumstances, badges are regarded as a means of demonstrating learning achievements to prospective employers, and they can be used to track and communicate learning routes, achievements, abilities, and competences. Some schools are evaluating the use of badges in the context of credentialing and micro-credentialing, as well as badges' potential to enhance competency-based education and new technologies. To successfully deploy a digital badge system in higher education, institutional context, strategic position, degree of investment, policy and process difficulties, learning and teaching techniques, and technical considerations all need to be considered.

The authors address a study on the use of digital badges to inspire learners in a K-12 context in the book's twenty-seventh chapter. Using theories of learning and engagement, the badges were created to represent mastery learning in certain science standards. According to the study, badges were motivating for both students and teachers, resulting in improved learning products and student engagement, and they featured a hybrid motivational construct that contained both performance and learning goal orientations. The authors recommend additional research on the design principles for standards-based digital badges as well as the theoretical foundation for using badges to inspire pupils.

The edited volume includes a collection of works and findings on digital badges from many viewpoints in education, including theoretical approaches, design implementations of badging systems, case studies, and research findings, according to the book's twenty-eighth chapter. The previous chapters' three main themes are the impact of digital badges on learning and evaluation, digital badge design and technological considerations, and stakeholders' acceptance of digital badges. The epilogue continues by outlining future study directions on digital badges in various educational contexts such as K-12, higher education, and organizations.

3. Conclusion

This book focuses on the theoretical foundations and empirical evidence for the usefulness of digital badges, as well as the technological design difficulties that are relevant to the use of digital badges. Case studies that highlight how digital badges are now being utilized in a variety of educational contexts and for a variety of reasons, such as motivation, learning, and instruction, are included in this resource as well. The purpose of this selected collection as a whole is to shed light on the potential advantages and uses of digital badges in a wide variety of educational settings and settings.

References

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