Workforce Literacy in Colleges of Agriculture: Student Knowledge and Perceptions of Credentialing and Digital Badging

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Introduction/need for research

Workforce development is paramount to the advancement of the labor force. Credentialing, digital badging, certificates, and related items have entered the lexicon of professional development across the agriculture and natural resources industry. The Association of Public and Land-Grant Universities (APLU) reports an increase in flexible learning for post-secondary education (Rodriguez et al., n.d.). However, little is known about the terminology and how credentialing and digital badging are viewed in the hiring process and among those seeking jobs across the food, agricultural, natural resources, and human sciences fields.

Micro-credentials are short, competency-based recognitions that verify specific skills, often stackable, and aligned with industry needs (Galindo & Gauthier, 2025). Digital badges are defined as electronic micro-credentials that document skill acquisition, professional development, or course-based achievements (Stefaniak, 2019). While significant inconsistencies in terminology remain, there is broad agreement that both micro-credentials and digital badges support accessibility, lifelong learning, and personalized pathways (Galindo & Gauthier, 2025). In education, credentialing is a necessary outcome for completing a course series or workshop focused on advancing knowledge (Egloffstein & Ifenthaler, 2017). Digital workforce badges are introduced as structured digital tools designed to help community college agriculture students identify, develop, and articulate employability skills, including communication, teamwork, adaptability, and self-management (Carmichael et al., 2025).

Conceptual or theoretical framework

This study was framed by human capital theory (Becker, 1993). While Becker's (1993) original work focused on the economic function of education, human capital theory posits that people invest in education to improve their overall prosperity, both socially and financially (Becker, 1993; Eide & Showalter, 2010). Investments can take on many forms, including experience and training in formal and non-formal settings. For this study, we framed digital badges, credentialing, and micro-credentials as training and education that would serve to improve learners' knowledge and overall job prospects.

Methodology

This study utilized a cross-sectional, quantitative research design to examine college students' knowledge and perceptions of certificates, credentials, and digital badges as they relate to hiring and professional development in agriculture and natural resources fields. Participants were recruited at two career fairs hosted by colleges of agriculture. The venues were chosen due to convenience and connection to the context of the study (hiring and professional development). Participation was voluntary, and the study protocol was approved by the respective institutions' IRB. Data was collected using an online survey via Qualtrics and was designed to capture self-reported responses. The instrument included a combination of multiple-choice responses and Likert-scale questions (e.g., 1 = *strongly disagree* to 5 = *strongly agree*), and open-ended responses. Survey items were adapted from the literature and aligned with the guiding research

question. All responses were anonymous. Data was screened and incomplete responses were removed.

Results/findings

The student respondents (N = 54) represented first year students (38.9%), sophomores (3.7%), juniors (20.4%), seniors (33.3%), and masters level graduate students (3.7%) across two colleges of agriculture. 44% (N = 24) report having a micro-credential (n = 5), certificate (n = 15), or digital badge (n = 4). When it relates to their understanding of credentialing, the results show most students do not possess a solid knowledge base. Half of the participants reported not being familiar with credentialing (n = 27). 74.1% reported not being familiar with micro-credentialing (n = 40). 59.3% reported they were not familiar with digital badges (n = 32). Certificates carried the most knowledge, with 64.8% reporting awareness of what a certificate was (n = 35). Only 16.7% reported they could define and provide examples of credentialing (n = 9).

While they do not have a full grasp on the terminology, college students hold a different angle on how companies within the agriculture and natural resources sectors are using credentials. 66.7% of students agreed or strongly agreed that the companies they are interested in for employment are using or supporting the use of credentials or digital badges. (n = 36). 31.5% (n = 17) agree that credentials add value to an applicant seeking employment in the agriculture industry. However, 57.4% of respondents (n = 31) report being unsure of how credentials and badging meet the professional standards of agriculture companies, but 31.5% think companies should expand their use and reliance on credentials (n = 17).

Conclusions

College students report not having a large knowledge base when it comes to the use of credentialing in the hiring process used by agricultural companies. However, they do report a belief that agricultural companies are using credentialing in the hiring process, but it is unclear where these observations are coming from. Coinciding with this view of increased value, this aligns with students' viewing credentialing as an input for education that would improve their human capital and job standing (Becker, 1993).

Implications/recommendations/ impact on profession

The lack of knowledge of the various forms of credentialing implies a greater need for education and partnership with industry professionals. It also brings about marketing opportunities for students at various levels. Based on our findings, further research should investigate where students are seeking external training or education opportunities and where their belief that credentials are being used in the hiring process is originating. Additionally, perceptions of credentialing programs and values held by such programs should be measured among agricultural, food, and natural resource employers, especially those who are involved in the hiring process. This study impacts how we discuss workforce development with our students and how we are partnering with industry to advance educational pursuits and opportunities for advancement. While we know these credentials can serve as a visual or external means of demonstrating the education has been earned, there is much left to know about their impact on developing the workforce.

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