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Cultural Scripts for Teaching Transferable Skills:

Exploring the Role of Industry Experience and Pedagogical Situations on Skills-Focused Instruction in College Classrooms

Continuing Studies
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Executive Summary

A long-standing question in research on teaching and learning in higher education is why faculty teach the way they do, with consensus emerging that a multi-dimensional array of factors impacts instructional decision-making. In this paper we consider the case of prior industry experience and its impact on transferable skills (e.g., communication, teamwork) instruction, which is a relationship being scrutinized amidst growing concerns around college students' career readiness, based on the assumption that non-academic work experience conveys a commitment to hands-on, workplace-ready teaching. However, postsecondary research has limited conceptual tools for studying how cultural information about teaching in internalized in one context and deployed in another.

In this study we address this conceptual problem by focusing on person-centered views of culture that emphasize the cognitive schema instructors may have for common instructional routines, which they may acquire from various experiences and communities (i.e., cultural scripts). Using inductive thematic and hierarchical linear modeling techniques to analyze survey (n=1,140) and interview (n=89) data from STEM faculty in four large U.S. cities, our key findings are:

1. A majority of faculty had industry experience, with 56.63% (*n*=632) reporting less than 10 years and 19.62% (*n*=219) reporting more than 10 years of industry experience;

2. Faculty infrequently emphasize transferable skills, with most reporting that survey items describing skills-focused teaching methods were "minimally" (1) or "somewhat descriptive" (2) of their teaching on a 5-point scale, with the highest emphasis on problem-solving (*M*=2.35, *SD*=0.82);

3. A large number of factors influence transferable skills instruction – not just industry experience. These include individual (e.g., race, gender, adjunct status, industry experience), organizational (e.g., discipline, institution type), and relational factors that link structural and agentic elements (e.g., perceptions of peer teaching norms and future employers' expectations); and

4. Faculty report cultural scripts for teaching skills that encompass underlying assumptions of learning (e.g., courses should emphasize employer skill needs) and in-class pedagogical techniques (e.g., real-world assignments). These scripts are also associated with a variety of individual, organizational, and perceptual factors.

These results highlight the fact that teaching is shaped by multiple identities, experiences, and organizational contexts, and future research should examine the ways that racial, gender, and occupational identities provide faculty with varied cultural scripts for teaching and learning. The data also offer a new perspective on cultural activity and change in higher education, and that institutions should consider encouraging the adoption of industry-based cultural scripts via faculty development and/or externships, while also being cognizant of the prospect that any scripts – but especially those for transferable skills - can encode discriminatory or marketized ideologies that are antithetical to a liberal and equity-focused education.

Keywords: cultural scripts, industry experience, instructional decision-making, transferable skills, career readiness.

Introduction

Why do postsecondary faculty teach the way they do, and what predicts their use of particular teaching methods and student engagement strategies in the classroom? Based on research over the last 40 years in both K-12 and postsecondary settings, consensus exists that no single predictor of instructional practice exists, but that a myriad of forces (e.g., individual, socio-cultural, and contextual) interact to shape how an instructor plans and teaches their classes (Shavelson & Stern, 1981; Lattuca & Stark, 2011; Posselt et al., 2020). While such complexity complicates the problem of educational reform, it has not stopped the field from speculating that once discovered, influential predictors or processes of instructional decision-making could be changed, improved, or otherwise altered to affect desirable changes in teachers' behaviors (e.g., Hativa & Goodyear, 2001; Kezar & Eckel, 2002; Spillane et al., 2001). In other words, is it possible that new policies, organizational conditions, or professional development that targeted key predictors of instructional decision-making could increase the odds of desirable teaching and ultimately student learning?

Teaching is shaped by multiple identities, experiences, and organizational contexts, and future research should examine the ways that racial, gender, and occupational identities provide faculty with varied cultural scripts for teaching and learning.

In this paper, we address this question by examining the potential role of a specific type of instructor attribute – that of prior experience in non-academic workplaces (hereafter called industry experience) - that is theorized to be associated with students' acquisition of skills known variously as "soft," "non-cognitive" or "transferable".

In this paper, we address this question by examining the potential role of a specific type of instructor attribute – that of prior experience in non-academic workplaces (hereafter called *industry experience*) - that is theorized to be associated with students' acquisition of skills known variously as "soft," "non-cognitive" or "transferable" (Deming, 2017; Pellegrino & Hilton, 2002). While learning outcomes such as content mastery or degree attainment remain key goals of postsecondary policy and practice, whether students are developing skills such as communication, teamwork, problem-solving, or self-directed learning is an increasingly prominent question given their centrality to the liberal arts mission (Cronon, 1998) and their growing demand in the modern workplace (Hora et al., 2021; Deming, 2017). Further, as discourses around higher education continue to reflect a neoliberal turn in its focus on students' return on investment and their employability in the labor market (Holmes, 2013; Tomlinson, 2010) questions are only growing around whether faculty are emphasizing these "career ready" skills in the classroom (National Association of Colleges and Employers, 2022; Savitz-Romer et al., 2015).

One answer to this problem is that an instructor's prior work experience outside of academia may confer a preference for emphasizing transferable skills in the classroom (Chan, 2018; Phelan et al. 2013). The mechanism governing this hypothesis is that faculty largely "teach the way they were taught," meaning that persons socialized in a non-academic workplace will teach in hands-on, work-relevant manner (Fairweather & Paulson, 1996; Mazur, 2009) instead of abstracted lecture-based pedagogy (Luft & Vidoni, 2000; Wagner et al., 2021). In addition, some argue that industry experience may act as an antidote to the proverbial "ivory tower" ethos

which denigrates attention to vocational concerns (Sorenson & Flaherty, 2015), leading to proposals that faculty be required to take "externships" or short-term field experiences (Kinsella & Waite, 2021) or even have industry experience in order to be hired (Chan, 2018) or licensed (Beck, 2015). Consequently, some argue that that higher education needs more faculty with industry experience than the current 19.2% (National Center for Education Statistics, 2020), so that students are taught by professionals who could more readily and willingly emphasize workplace-ready skills.

There are two limitations with this hypothesis, however, that we examine in this paper. The first gap in the literature is that while some studies have shown that industry experience influences faculty behaviors such as selecting practical over theoretical content (Burns, 2012; Wagner et al., 2021), this line of inquiry is relatively sparse and does not address the present question of whether or how industry experience influences the emphasis on transferable skills. Consequently, the relationship between industry experience and what we call "skills-focused instruction" (Hora et al., 2021) remains an open empirical question.

The second issue we address pertains to the issue with how culture is conceptualized in higher education in general, and in studies of faculty teaching in particular, especially the unit of analysis wherein cultural elements reside and then change (or not) over time (Välimaa, 1998). This question is critical because the operative hypothesis in the literature is that engagement in non-academic workplaces instills knowledge and beliefs about teaching which are then exported to postsecondary settings where these norms overrule academic predilections for lecture-heavy, abstracted pedagogy (Burns, 2012; Fairweather & Paulson, 1996). This hypothesis suggests that this process is governed by *enculturation* (i.e., acquisition of culture from one's original group) (Shimahara, 1970) within industry, and *acculturation* (i.e., changes in culture based on contact with other groups) (Redfield et al., 1936) as the individual leaves a company to pursue an academic teaching position.

However, this argument of individual-level cultural transmission is not made explicit in the literature, which results in a "black box" problem whereby the processes governing how beliefs or knowledge are learnt, perpetuated, and altered remain unexamined. This is due in part to the absence of theoretical tools available for studying individualistic cultural processes in the postsecondary literature, where dominant conceptions have essentialized culture in terms of static, universally shared beliefs and routines among groups at meso- or macro-levels that govern individual practice (e.g., Berguist, 1992; Becher, 1989; Weiman et al., 2010) – accounts that overlook the question of whether and how culture "travels" and changes at the level of individual actors. Promising lines of inquiry that avoid these unitary notions of culture explore how it operates within smaller communities of practice (Gehrke & Kezar, 2017; Knight & Trowler, 2000) and at the level of individual faculty and students (Austin, 2002; Nora, 2004; Tierney, 1999), though these studies stop short of articulating precisely how cultural knowledge is internalized, changes, and affects decision-making.

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Consequently, the field of higher education lacks a cultural theory that could explain how a person is enculturated in an industrial workplace, and then acculturates (or not) into a college or university. In this paper we address this gap by developing a new framework that focuses on *cultural scripts*– cognitive schema for

routinized instructional actions acquired from various social and organizational settings throughout life – that are enacted within and constrained by unique instructional situations. In doing so we synthesize prior work on instructional (Shavelson & Stern, 1981) and cultural scripts in K-12 settings (Stigler & Hiebert, 1999), person-centered views of cultural knowledge acquired via participation in community practices (Strauss, 2006), and trait-oriented accounts of cultural change and resistance (O'Brien et al., 2010). In adopting a cognitivist perspective, however, we reject standard psychological frames that focus on rational interiority at the expense of the personal and situational (Lutz, 2017), and instead emphasize how agentic behavior is shaped by the interplay among identity, culture, and the unique disciplinary and political contexts in which people work (Hora, 2020; Posselt et al., 2020; Ray, 2019).

While the majority of faculty in our study had industry experience (76.2%), their emphasis on transferable skills was relatively weak and shaped by a panoply of individual (e.g., race, gender, adjunct status, industry experience) and organizational (e.g., discipline, perceptions of contextual affordances), the data contribute new empirical insights on the multi-dimensional nature of instructional decision-making.

Following a brief exposition of the theoretical and empirical foundations of this approach, we then report findings from an exploratory mixed-methods study where these ideas were explored in the context of teaching in science, technology, engineering, mathematics and medical (STEMM[iii]) fields. The study took place in four cities with high concentrations of jobs in these fields and included faculty from 76 two-year colleges and 36 four-year universities who participated in an online survey (n=1,140) and interviews (n=89). These data were analyzed in a two-step process where quantitative analyses focused on the following research questions:

1. How many faculty have non-academic professional (i.e., industry) experience?

2. How if at all, does industry experience (and individual and situational factors) influence how faculty emphasize transferable skills?

Then, analyses of both interview and survey data focused on two questions about cultural scripts:

3. How are specific cultural scripts associated with individual and situational factors?

4. What are the origins and content of these cultural scripts as they are enacted the classroom?

In showing that while the majority of faculty in our study had industry experience (76.2%), their emphasis on transferable skills was relatively weak and shaped by a panoply of individual (e.g., race, gender, adjunct status, industry experience) and organizational (e.g., discipline, perceptions of contextual affordances), the data contribute new empirical insights on the multi-dimensional nature of instructional decision-making. Additionally, a cultural scripts approach – which reveal routines for both fundamental assumptions of learning and in-class pedagogical strategies – provides new ways for the field of higher education to study cultural aspects of instruction and institutional change. We conclude the paper with an analysis of the implications of these data for faculty development, but also concerns that cultural scripts can encode ideologies and norms antithetical to a liberal, democratic, and equity-oriented education (Cronon, 1988; Harris & Patton, 2019; Urciuoli, 2008).

Background

In this section we provide a brief overview of the literature on instructional decision-making, with focus on role of individual-level factors such as industry experience, cultural and institutional factors, and relational approaches that emphasize the situational nature of cognition and practice. An in-depth discussion of culture theory follows that outlines problems with unitary, homogenous views of organizational culture, and how we employ person-centered theories of culture and cognition to study the issue of enculturation in the case of industry experience and skills-focused instruction in postsecondary institutions.

Background to Instructional Decision-making: Individual-level Factors

Studies of the various factors that shape both K-12 and postsecondary teaching surged in the 1980s as scholars and policymakers ultimately sought to identify which factors most predicted certain teaching decisions and practices (Conrad & Pratt, 1983; Shalveson & Stern, 1981). While much of the early research in this area focused on determining features of "effective" schools and teachers, scholars also sought to identify characteristics of teachers who were most proficient at culturally relevant pedagogy (e.g., Moll, 1988), with the ultimate aim of affecting change in how teachers were prepared, selected, and trained. As part of this exercise, scholars increasingly advanced a conception of teaching that belied prior views that the profession merely involved the execution of pedagogical techniques or the "covering" of material (Darling-Hammond & McLaughlin, 1995), but was instead a difficult craft that entailed an individuals' often variable enactment of the curriculum both before and during a class session (Remillard, 2005; Stark, 2000). In acknowledging the idiosyncratic nature of teaching, K-12 scholars of this era began to study how individual-level attributes such as beliefs about student learning (Nespor, 1987) or the structure of their content and pedagogical knowledge (Leinhardt & Greeno, 1986) impacted their teaching.

Building on these developments, the most prominent line of inquiry on instructional decision-making in higher education adopted a psychological focus in the 1990s, especially with the use of the "approaches" to teaching construct. The idea of teaching approaches was based on studies of faculty beliefs about student learning, which varied among Australian faculty from being teacher-centered (i.e., teaching ss the delivery of content to waiting students), to student-centered (i.e., teaching is the active facilitation of student learning) (Trigwell & Prosser, 1991). This binary conception of the psychological underpinnings of faculty teaching was widely embraced, with the operative hypothesis being that convictions about whether learning itself was driven by the teacher or the learner was the primary driver of curriculum design and classroom pedagogy (Samuelowicz & Bain, 1992). While postsecondary scholars did not explicate the mechanisms underlying these processes, K-12 researchers drew on insights from cognitive psychology to suggest that beliefs or strong "existential assumptions" (Nespor, 1987, p.11) actually dictate which features of situations and tasks are noticed and acted upon (Fives & Buehl, 2012).

Another influential idea in K-12 research on cognitive aspects of teaching came from research on constraints of perceptual systems in complex situations, where simplified mental models of tasks or cognitive shortcuts known as heuristics (Tversky & Kahneman, 1974) operate in place of a deliberate and rational consideration of all available information. Similarly, cognitive scripts are schematic representations of knowledge about

specific, recurring events or behaviors that guide actions such as ordering from a menu in a restaurant (Schank & Abelson, 1975) or running departmental meetings (Gioia & Poole, 1984). Scripts are also theorized to help people (particularly new entrants to a community) with understanding novel situations by providing explanations for appropriate activity, and over time these event-based rules become part of a person's collection of scripts available to deal with common tasks (Gioia & Poole, 1984). In educational settings, teachers rely on an idiosyncratic set of scripts for things like preparing lesson plans or answering student questions in class, situations which set in motion memorized (and in the cases of experts – proven to be successful) sequences of activity (Borko et al., 1990).

But these scripts do not come from just anywhere and are acquired through both direct interaction with other people or events (e.g., experiencing a performance review) and indirectly through communications or artifacts (e.g., reading about review policies) (Bandura, 1977; Gioia & Poole, 1984). For professional educators, instructional scripts and habits are often acquired during one's own years as a student or novice teacher, where vicarious learning of other instructors leads to what Lortie (1975) famously called an "apprenticeship of observation" and the common notion that postsecondary faculty "teach the way they were taught" (e.g., Mazur, 2009). However, research on how faculty acquire instructional knowledge reveals that trial-and-error in the classroom and subsequent student feedback (Ferrare & Hora, 2014; Hativa, 1997), and professional development using cohort-based and disciplinary approaches (e.g., Ebert-May et al., 2015) were most influential in shaping current teaching practice. Thus, prior experience as both a student and an instructor appears to play a major role in populating a person's cognitive repertoire of scripts for teaching.

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Further complicating the process of instructional script acquisition are findings that experiences outside of the profession (e.g., family, religious community, prior workplace) (Benbow & Hora, 2018), individual identities such as gender (e.g., Nelson Laird et al., 2011), perspectives on student diversity (e.g., Aragon et al., 2017), and positionality within an institution (e.g., adjunct status) (e.g., Umbach, 2007) all appear to impact teaching practices. This diversity of possible individual-level influences on teaching behaviors echoes research on faculty identity, which contends that while graduate school plays a critical role in shaping identity so too does family situations, educational background, and membership in different cultural communities (e.g., Austin, 2002; Välimaa, 1998). It is to this question of the influences of non-academic experiences on faculty teaching behaviors that we now turn.

A Closer Look at Industry Experience and Instructional Decision-making

One of the motivations for pursuing our study was the paucity of empirical research on the possible effects of industry experience on faculty teaching, but also on the basic question of how many faculty have such experience at all. Topics that researchers have examined in this area tend to include more rhetorical arguments regarding the value of industry experience on teaching (Narayanan, 2009), or surveys of faculty opinions regarding the value of industry experience on teaching (e.g., Phelan, Mejia and Hertzmann, 2013).

One of the most robust studies on the prevalence and impacts of industry experience is from 1996, where Fairweather and Paulson examined data from the 1988 National Survey of Postsecondary Faculty (NSOPF) and found that approximately 50% of engineering and biology faculty had some industry experience. Our own review of 2004 NSOPF data indicates that 19.2% of all faculty had prior industry experience (National Center for Education Statistics, 2020), a discrepancy that could be explained by the prospect that STEM faculty are more likely than others to have worked outside of academia. The study also found that faculty without industry experience were, "typically less prepared to teach using 'real-world' methods" (Fairweather & Paulson, 1996, p.210), concluding that reform efforts should not only change faculty attitudes, but also encourage graduate students to spend time working in industry or even to give greater priority to industry experience when making faculty hires.

A study of community college computer science instructors documented that while industry experience led to strong convictions on the importance of trans-ferable skills like teamwork and communication, their actual teaching methods were largely PowerPoint lectures with lit-tle opportunities for student-led learning.

More recent studies have found that industry experience provides instructors with a repertoire of real-world anecdotes or "war stories" with which to regale their students in the classroom (Harmer, 2009, p.47), a finding that brings to mind the aforementioned notion of instructional scripts. Similarly, a study of 14 community college instructors found that they drew upon their industry experience to highlight practical applications of abstract concepts, provide real-world examples, use industry networks to enhance their teaching (e.g., class visits, internship opportunities), provide mentoring, and to generally "replicate the workplace" in their classrooms (Wagner et al., 2021, p. 496).

However, some studies find that industry experience does not lead automatically to a strong, high-quality emphasis on experiential learning and/or a focus on transferable skills. Burns (2012) conducted a survey of 172 faculty and found that faculty with industry experience used real-world or simulated projects far less (39%) than those without such experience (70%) and emphasized different course topics than those without such backgrounds. A study of community college computer science instructors documented that while industry experience led to strong convictions on the importance of transferable skills like teamwork and communication, their actual teaching methods were largely PowerPoint lectures with little opportunities for student-led learning (Hora et al., 2021).

A related line of inquiry explores the impacts of teacher "externships" where instructors spend time off-campus to learn about current workplace technologies and skills needs. For instance, Luft and Vidoni (2000) found that instructors doing these externships gain first-hand knowledge of the workplace skills that students should be acquiring in the classroom, and subsequently emphasize "social skills," invite guest speakers, and use more hands-on teaching methods in their classrooms than before. It is evidence such as this that informs arguments that faculty should be required to take externships (Kinsella & Waite, 2021) or even have industry experience in order to be hired (Chan, 2018), but the limited and contradictory evidence on these points should give pause. Further raising questions about the unilateral and positive effect of industry experience on teaching is ample evidence that pedagogical decisions are shaped by not only individual-level beliefs or experiences, but a wide range of cultural, organizational, and contextual factors.

Background to Instructional Decision-making: Departmental and Institutional Factors

Scholars of instructional decision-making have long acknowledged that no single factor explains why a teacher works the way they do, and that in addition to individual or cognitive attributes, a number of contextual factors must be considered. In K-12 research scholars have documented the influence of forces such as institutional constraints (e.g., curricular policies, reward structures, etc.) (Shavelson & Stern, 1981), colleagues within schools and departments (Coburn, 2001), and school leadership (Spillane et al., 2001), and especially how teacher perceptions of these constraints and affordances suggested particular behaviors. Researchers such as Greeno (1998) drew on situated cognition theory to argue that teachers and their socio-structural environments were not separable, but that individuals became attuned to certain constraints (e.g., limited supplies), norms, policy directives and so forth, which over time become influential cognitive heuristics guiding action (see also Putnam & Borko, 2000). Consequently, context and individual attributes - or put in the sociological terms of structure and agency – exist in dynamic relationship with one another to shape social action (Ferrare & Apple, 2015; Ray, 2019).

While many postsecondary researchers of faculty teaching have focused on individual attributes or cognitions such as appointment types (Umbach, 2007), teaching approaches (Trigwell & Prosser, 1991), or industry experience (Fairweather & Paulson, 1996) as primary drivers of teaching behaviors, a parallel line of inquiry has elaborated on relational views of behavior by focusing on faculty perceptions of their institutional contexts. For instance, Lindblom-Ylänne and colleagues (2006) found that approaches to teaching varied across disciplinary groups and between course contexts, while other studies honed in more closely on the composition of faculty mental models for teaching, finding that they were comprised of both course-specific scripts and tactical considerations of the immediate context (e.g., class size, student background) (McAlpine et al., 2006). Such a relational view is also evident in recent work on the processes whereby faculty make evaluative decisions for hiring or peer review (Posselt et al., 2020), which draws on the cultural frame of Gutiérrez and Rogoff (2003) to emphasize the group-level forces that shape faculty behaviors.

The influence of "culture" on faculty decision-making is arguably the least well developed in the postsecondary literature, particularly the precise location of cultural elements, how they impact agentic decision-making, and how both culture and people change over time.

Outside of this promising line of inquiry on evaluative decision-making, however, the influence of "culture" on faculty decision-making is arguably the least well developed in the postsecondary literature, particularly the precise location of cultural elements, how they impact agentic decision-making, and how both culture and people change over time.

A Closer Look at the Culture Construct and Studies of Postsecondary Education

Despite the idea of culture being ubiquitous in the postsecondary literature, its contested nature is too infrequently discussed. While an examination of the fraught history of the construct is beyond the purview of this paper, it is worth noting that its manifestations, functions, boundaries, and representational rights have

sparked heated arguments in anthropology, sociology, and organizational studies for several decades. In fact, amid the postmodernist tumult of the 1980s, where the prospect that ethnographies of the "other" were incomplete, fiction-like texts written by mostly white, male outsiders was raised (e.g., Clifford & Marcus, 1986), some suggested that the construct itself should be retired – particularly as a noun denoting the presence of distinct things or entities (e.g., Abu-Lughod, 1991; Brumann, 1999). Acknowledging this history is important so we do not repeat mistakes of the past or overlook critical conceptual developments, and for our current study it is essential to consider the intertwined debates on cultural units of analysis, homogeneity, and evolution as they pertain to the question of industry experience and postsecondary teaching.

The perspective on culture that is most salient to our study is the common view that culture is a set of shared beliefs, practices, and related social structures that can be ascribed to entire populations, which leads to proclamations about the culture of "the Japanese" or "the Papuans." Such macro-level perspectives position culture as static assemblages of indicators (e.g., knowledge, art, customs) uniformly applied to entire groups, that in their attempt to capture diverse manifestations of culture effectively "renders the term meaningless" (Ball & Ladson-Billings, 2020, p. 389). But such accounts permeate the postsecondary literature, with influential frameworks asserting that academic culture writ large can be characterized as "collegial" or "managerial" (Berguist, 1992), disciplines as "hard pure" or "soft applied" (Becher, 1989), and departments as having monolithic cultures antithetical to active learning (Wieman et al., 2010). But such unitary accounts of academic "culture" have been discredited across the disciplines for three key reasons salient to our current study.

First, consensus-based accounts assume a homogeneity of and conformity to beliefs and practices among all members of a group or organization that may not exist in practice, thereby failing to account for the demonstrated existence of organizational sub-cultures or distinct communities of practice (Trowler & Cooper, 2002; Van Maanen & Barley, 1984), dissent and rejection or repudiation of dominant norms (Abu-Lughod, 1991), and cultural change and evolution (see also Martin, 2002).

Second, while the debate about the proper unit of analysis for studying culture (e.g., individual, group, society) made famous by Geertz's (1973) dismissal of cognitive anthropologists' focus on micro-level cultural meaning-making continues, what some call "person-centered" accounts of culture are now widely embraced in the social sciences (e.g., Brown et al., 1989; DiMaggio, 1997). While these approaches tend to focus on how individuals internalize and deploy knowledge derived from their social worlds, the presence of cultural elements in public forms is acknowledged as foundational material for individual cognition and ideology, making relationships between structure and agency a key analytic focus (Ferrare & Apple, 2015; Ray, 2019; Strauss & Quinn, 1997). Further, a focus on the individual as a key unit of analysis also provides researchers analytic precision, which vague descriptors of culture such as "the imaginary" or omnibus, catch-all claims of culture fail to do (Strauss, 2006).

Finally, unitary and macro-level views of culture rarely address if/how culture change occurs, with a focus on whether entire societies, institutions, or disciplines are "changing their cultures." Besides overlooking extensive literatures in cultural anthropology on the topic, especially long-standing debates about processes and appropriate analytic units for studying culture change (O'Brien et al., 2010), a macro-level orientation cannot speak to the site where processes of enculturation, acculturation, and assimilation occur – the individual in relationship with their social, historical, and institutional environments. Consequently, in seeing culture

change only operative at larger scales, this perspective cannot provide theoretic or empirical tools for studying cultural evolution at smaller units of analysis, which is our primary concern in this paper.

Fortunately, numerous alternatives to the consensus-based model of culture have been used in postsecondary research, including studies of individual-level cultural capital (e.g., Nora, 2004), cultural aspects of academic identity formation (Välimaa, 1998), problems with cultural assimilation for students of color (Cano & Castillo, 2010; Tierney, 1999), cultural forces operative in small communities of practice (Gehrke & Kezar, 2017; Posselt et al., 2020), and how cultural information for teaching is perpetuated at individual levels (Grunspan et al., 2018). We build upon these works to advance a new person-centered approach for studying cultural aspects of teaching in postsecondary institutions.

Our Approach: Cultural Scripts as Internalized, Situational Knowledge about Teaching

To answer our research questions regarding the role of industry experience and its potential impact on skills-focused instruction in college classrooms, we drew on the following theoretical propositions to guide our study.

First, we adopt a person-centered view of culture that locates cultural information in people's minds, internalized from various communities and situations as scripts (Gioia & Poole, 1984; Strauss & Quinn, 1997). Here we use the script construct to capture cultural knowledge about recurring, sequenced events that characterize the teaching profession such as introducing a daily lesson, dealing with disruptive students, or emphasizing transferable skills like teamwork or critical thinking (Shavelson & Stern, 1981). These scripts are cultural forms because they are acquired from our family, communities and societies (Austin, 2002; Gutierrez & Rogoff, 2003), often carry normative force and expectations for appropriate behaviors (Vanclay & Enticott, 2011), and are closely tied to institutional structures and situations which give them meaning, influence, and visible points of reference (Brown et al., 1989; Ray, 2019). Importantly, an individual acquires a wide range of distinct scripts from varied cultural influences through enculturation – such as through working in industry - such that a person can accumulate a complex repertoire of scripts that contain competing norms for behavior.

Second, as an individual leaves their home community (or a job in industry), they and their cultural scripts enter an entirely new cultural milieu that is populated with individuals who have their own unique set of scripts and norms. Colleges and universities are unique workplaces with discipline-specific views of theory, method, and learning (Clark, 1983), norms of instructional autonomy (Austin, 2002), and structural constraints that are informed by these norms while also reinforcing them (Knight & Trowler, 2002; Lindblom-Ylänne et al., 2006). This is a transitional, liminal phase of uncertainty where individuals depart the familiar and enter entirely new spaces and situations, and for educators it involves bringing a host of cultural scripts for teaching from their time as a student, socialization in graduate school, or habituated practices from past jobs into their new role (Ferrare & Hora, 2014).

Finally, when new hires enter these new workplaces there is an opportunity for cultural clash and resistance, enculturation and adaptation, or the adoption of entirely new instructional strategies. Over time, through a process of acculturation, both pre-existing and new scripts interact with constraints and affordances in the local context (e.g., class sizes, student backgrounds, departmental policies), resulting in a new set of localized cultural scripts (Greeno, 1998). In advancing this approach, we acknowledge that the empirical study report-

ed in this paper is a partial exploration of these ideas, but hope it provides the field with an example of how these theoretical tools can be used to study the relationships among individual identities and experiences, culturally shaped cognitions, organizational factors, and instructional practice.

Methods

The data reported in this paper is part of a larger research project focused on how cognitive, inter- and intra-personal skills are defined, used, and taught in four STEMM fields in four U.S. cities. These four cities were selected because they had high levels of employment in STEMM occupations (see Rothwell, 2013). The focus on STEMM sectors, which include energy, health care, advanced manufacturing, and computer science, is due to the funding source for the project (i.e., the National Science Foundation) as well as interest in these sectors among analysts of students' career outcomes (e.g., Carnevale, Smith & Melton, 2011).

The design for this study is a concurrent mixed methods approach where analyses of quantitative and qualitative were conducted simultaneously with interpretations of findings occurring across both datasets as the final analytic step (Creswell, 2014). However, the analyses of survey data took precedence for research questions one and two, as these questions focus on issues of frequency (i.e., prevalence of industry experience, emphasis of skills-focused instruction) and their inter-relationships that are well suited to quantitative analyses. A more restricted set of qualitative analyses gleaned from interviews about the content of specific cultural scripts are included to provide context and fine-grained detail for these quantitative analyses.

Sampling Strategies

Study institutions and respondents were identified using a combination of purposeful, nonprobability sampling and self-selection procedures. First, we selected two prominent STEMM industries in each city by identifying the largest local STEMM employers by number of employees using local employment lists. Once STEMM industries were identified, data from the U.S. Bureau of Labor Statistics (2016) were used to identify the most populous STEMM occupations in these industries (e.g., nursing in health care). Next, we identified two- and four-year higher educational programs in each region that prepared students to enter these occupations. From institutional websites we identified all instructors-of-record in each of these programs and created sample frames of full-time, part-time, tenured, tenure-track, and adjunct faculty members.

Starting in the spring of 2017 through the fall of 2018, we sent online surveys to a total of 4,712 faculty from 85 two-year institutions and 42 four-year institutions across the four cities with an incentive of $2.00. Final respondents were 420 educators from 76 two-year colleges and 720 educators teaching from 36 four-year universities, resulting in a response rate of 24.19% (n=1,140). We tested for potential sample bias by comparing the distribution of institutional types among the sample. The Chi-square test shows educators teaching at the two-year institutions were slightly overrepresented in the sample ($\chi 2$=6.058, p-value=0.014). While adjusting the weights may reduce the non-response bias, we decided to use unweighted data since deriving and applying statistical weights without considering auxiliary information may also lead to unstable estimates (Groves, 2006).

At the same time, we recruited a subsample of faculty for interviews. In each city we selected four-year universities (n=42) and two-year colleges (n=85) that appeared to be preparing the largest number of students in target occupations. Email inquiries were sent to all instructors who were actively teaching courses during the time of our fieldwork, and eighty-nine instructors ultimately self-selected into the study. See Table 1 for a detailed description of the study sample for both the quantitative and qualitative components of the study.

Table 1. Sample Characteristics

Variable	Interview	Survey			
		Industry experience			
		None	Less than 10 years	More than 10 years	All Surveys
Total (N)	89	265	632	219	1,140
Individual-level					
Gender					
Female	31 (.35)	100 (.30)	156 (.46)	82 (.24)	338 (.30)
Male	57 (.64)	162 (.21)	460 (.61)	135 (.18)	757 (.68)
Transgender	1 (.01)	0 (.00)	1 (1.00)	0 (0)	1 (0)
I do not identify as male, female, or transgender	0 (0)	2 (.15)	11 (0.85)	0 (0)	13 (.01)
Race					
American Indian or Alaska Native	9 (.10)	0 (.00)	2 (1.00)	0 (0)	2 (0)
Asian	7 (.08)	54 (.42)	61 (.47)	14 (.11)	129 (.12)
Black	4 (.04)	8 (.16)	20 (.39)	23 (.45)	51 (.05)
Hispanic	4 (.04)	9 (.25)	21 (.58)	6 (.17)	36 (.03)
Native Hawaiian or Pacific Islander	0 (0)	0 (0)	1 (1.00)	0 (0)	1 (.00)
White	61 (.69)	184 (.22)	498 (.59)	166 (.20)	848 (.77)
Not listed	4 (.04)	7 (.18)	23 (.61)	8 (.21)	38 (.03)
Academic rank					
Adjunct faculty	__	67 (.25)	266 (.42)	64 (.29)	401 (.35)
Non-adjunct faculty	__	198 (.27)	366 (.50)	155 (.21)	739 (0.65)
Department-level					
Discipline					
Advanced manufacturing	33 (.37)	30 (.16)	118 (.62)	43 (.23)	197 (.17)
Energy	18 (.20)	91 (.35)	131 (.50)	39 (.15)	265 (.23)
Health care	12 (.13)	23 (.20)	34 (.29)	59 (.51)	118 (.10)
Information technology	26 (.29)	80 (.21)	246 (.64)	60 (.16)	394 (.35)
Institution-level					
Institution type					
2-year	38 (.43)	54 (.13)	237 (.58)	120 (.29)	420 (.37)
4-year	51 (.57)	211 (.30)	395 (.56)	99 (.14)	720 (.63)

Note: Number and proportion (in parentheses).

Data Collection

The data collected in this study included a survey and in-person interviews, and in this section, we describe the development of and procedures for data collection activities.

Survey instrument. As part of the pilot phase of the larger study, the research team developed a survey that included a variety of questions about respondents' views of valuable skills, demographic characteristics, institutional contexts, and skills-focused teaching. Face validity and content validity of the initial pool of items were evaluated by sharing the preliminary survey items with a group of experts in STEMM education. A pilot version of the survey was then tested with 772 postsecondary educators in Wisconsin and New York, which led to another round of item revision. A final version of the instrument contained thirty-five questions and took less than twenty minutes to complete.

Dependent variables and independent variables. The dependent variables for the quantitative analyses included teaching practices related to key skills, and cultural scripts for teaching. In the survey, four items for each skill elicited the degree to which a statement accurately described the respondents' teaching using a 5-point Likert scale that ranged from 0 ('Not at all descriptive of my teaching') to 4 ('Extremely descriptive of my teaching'). Examples of items include the following for oral communication (e.g., I provide students opportunities to verbally articulate their own understanding of the material via Q&A session, class presentations), teamwork (e.g., I require students to work in groups - either in-class or outside of class - to accomplish course activities), and self-directed learning (e.g., I introduce students to self-directed learning concepts (e.g., time management and/or study habits).

The internal consistency for each of these scales was tested using Cronbach's alpha, with the following results: written communication (0.62), oral communication (0.71), teamwork (0.86), problem-solving (0.6), and self-directed learning (0.72). While values for some of these scales were lower than desired, values higher than 0.6 for Cronbach's alpha have been suggested as acceptable for scales with a small number of items or for new scales (Nunnally & Bernstein, 1994). The outcome measures were constructed by calculating the mean of the four items for each subscale (see Table 2).

Table 2. Descriptive Statistics for Industry Experience and Other Key Variables				
Dependent Variables	***M***	***SD***	***n***	***a***
Emphasis on teaching five skills[1]				
Written communication	1.54	0.91	1,128	0.62
Oral communication	1.77	0.92	1,129	0.71
Teamwork	1.95	1.16	1,128	0.86
Problem-solving	2.35	0.82	1,130	0.6
Self-directed learning	1.61	0.97	1,128	0.72
Cultural scripts for teaching obtained via industry[2]				
Understanding of skills needed in industry	3.30	1.16	919	
Give industry-related career advice	3.24	1.18	916	
Real-world experiences to use in classroom	3.33	1.21	915	
Introduce industry contacts to students	2.53	1.44	918	
Access to industry resources for teaching	2.30	1.50	918	
Independent Variables	***M***	***SD***	***n***	***a***
Individual: Industry experience				
No experience	0.24	0.43	265	
Less than 10 years	0.57	0.50	632	
More than 10 years	0.20	0.40	219	
Individual: Perceptions of contextual factors				
Future employers' expectations about graduate competencies	3.21	0.97	1,129	
Pre-existing course materials (e.g., lecture notes, slides)	2.69	1.17	1,128	
Expectations of my colleagues about desirable teaching methods	2.19	1.15	1,129	
Individual: Teaching experience	2.32	0.91	1,120	
Individual: Characteristics of the target course				
Size of the class	2.70	1.11	1,125	
Availability of resources (e.g., equipment, teaching assistants, facilities)	2.96	1.06	1.126	
Characteristics of students in my class	3.00	0.95	1,128	
Familiarity with teaching target course	2.21	1.05	1,095	

[1] These values reflect the mean score of the four items used to measure instructional emphasis on each skill.
[2] These values reflect the mean score of single items for each cultural script.

The other key dependent variable for the study was that of cultural scripts for teaching, and five items were developed during the pilot study that captured ways that faculty with industry experience described its impact on their teaching, such as, "my industry experience shapes my understanding of skills needed in industry." These scripts were measured using a 5-point Likert scale – which ranged from 0 ('No influence') to 4 ('Strong influence') – that captured the degree of influence that their industry experience had exerted on each cultural script.

The primary independent variable for statistical analyses was industry experience. Participants were first asked if they had worked as an employee in their discipline's industry or commercial field outside of academia. If respondents indicated "yes," they were asked to indicate the number of years they had engaged in industry. These responses were then recoded into values between 0 and 2, in which 0 denotes no industry experience, 1 denotes little industry experience (Less than 10 years), and 2 denotes a considerable amount of industry experience (Over 10 years).

Control variables. A variety of additional variables from the survey were included in our analysis based on prior research findings. First, individual-level demographic characteristics such as gender, race, and academic rank (e.g., adjunct status), and also their level of teaching experience, were included in the analysis. Of all reported ethnic/racial groups, we focused on the three largest racial groups due to statistical power considerations. Additionally, in accordance with the theoretical framework used in this paper we included variables that elicited individuals' perceptions about the influence of contextual factors (Hora, 2016): future employers' expectations about graduate skills, pre-existing course materials, expectations of my colleagues about desirable teaching methods, size of the class, availability of resources, and characteristics of students in the class. Additionally, institution-level variables known to impact teaching were included in the study such as disciplinary affiliation and institution type.

Semi-structured interviews. Interviews with instructors lasted about 45 minutes and featured eleven questions from a semi-structured protocol. The questions that elicited information related to the respondents' industry experience included an introductory question about their career pathway leading to their current position, a question about their general approach to classroom teaching, and a series of questions based on the critical decision-making method (Klein, 2008). This method is a retrospective think-aloud technique that begins with the question: "Can you think of a recent instance when you intentionally integrated one of these five competencies into your teaching undergraduates in your academic program?" For those who were able to think of such an instance of teaching one or more of these skills, we then asked, "Please describe the process of events and decisions that led to a focus on this particular competency, and then precisely how the competency was taught." Then, follow-up probes were asked regarding the specific impetus for the teaching behavior, their goals (if any) guiding their decision-making, and any factors (e.g., industry experience) that influenced their teaching. These sequenced activities provided the core material from which instructional scripts were identified.

Statistical analyses of survey data. To answer RQ1, basic descriptive statistics are provided in Table 1. For RQ2 we used HLM techniques to take into account the clustered nature of members of our sample nested within institutional and departmental contexts, while student's t-tests or one-way analysis of variance (ANOVA) was used to answer RQ3. The specific variables used to answer RQ3 (e.g., gender, race) were those found to be significantly related to skills-focused instruction in RQ2. Here we provide additional details on the methods used to answer RQ2 and RQ3.

First, as part of the HLM analysis for RQ2, the preliminary analysis of null model found significant, yet relatively small variation explained at the group-level. For instance, the variance between faculty for written communication skills was 91.54%, while the variance between departments was 5.48% and between institutions was 2.98%. However, Raudenbush and Bryk (2002) suggested that between group-level predictors can

be modeled in the multilevel analysis when previous literature provides basis on the potential effects of the predictors. Because earlier research has documented institutional or departmental contexts matter in faculty's approach to teaching (e.g., Umbach, 2007), we proceeded with a three-level random intercept HLM with individual-level, department-level, and institution-level predictors. Our Level 1 individual-level HLM model is:

$$Y_{ijk} = \beta_{0jk} + \beta_{1jk}\,(\textit{Industry experience})_{ijk} + \beta_{cjk}\,(\textit{Faculty characteristics})_{ijk} + r_{ijk}$$

where Y_{ijk} is the extent of using instructional methods to teach each of skills for faculty *i* in department *j* in institution *k*. β_{0jk} is the average descriptiveness of instructional methods used when teaching each of skills in department *j* nested in institution *k* after controlling for faculty's industrial experience and faculty characteristics. β_{1jk} indicates the coefficient for the relationship between faculty's previous working experience in the industry and their teaching practices. β_{cjk} can be interpreted as the relationship between the various teaching practices and a vector of faculty characteristics represented as faculty's views about the institutional contexts, teaching experience, familiarity with the target class, adjunct status, gender, and race. r_{ijk} is a random error term representing within-department variability. Second, our Level 2 department-level model is:

$$\beta_{0jk} = \gamma_{00k} + \gamma_{0dk}\,(\textit{Discipline})_{jk} + \mu_{0jk}$$

where γ_{00k} is an average estimate for each of skills instruction in the energy-related discipline for institution *k*, while γ_{0dk} captures the differences in mean outcomes between each discipline and the energy-related discipline. $\textit{Discipline}_{jk}$ is a vector of disciplinary identifications including health care, information technology, and advanced manufacturing. μ_{0jk} is the error term. Finally, the Level 3 model is:

$$\gamma_{00k} = \pi_{000} + \pi_{001}\,(\textit{Institution type})_{k} + e_{00k}$$

where γ_{00k}, an average descriptiveness in teaching practices in institution *k*, is modeled as a function of $\textit{Institution type}_k$, and the institution-specific random component, e_{00k}. π_{000} is the mean of outcomes of those who teach at two-year institutions and π_{001} denotes the difference in outcomes between two-year and four-year institutions. All the non-dichotomous predictors were centered at the grand mean to make the interpretation of the coefficients more clear (Hox et al., 2017).

Finally, to answer RQ3 we identified variables in the HLM analysis that were significantly associated with skills-focused teaching and included them in an analysis of the cultural scripts reported in the survey. T-tests and ANOVA analyses (with Tukey's honestly significant difference post-hoc tests) were then applied to compare the means on each dependent variables across groups with different cultural scripts.

Analysis of interview data. The analysis of interview data involved an inductive process of theme identification, where the first author reviewed text fragments pertaining to respondents' utterances about their career pathways and industry experiences. In reviewing the raw data, the analyst made margin notes (i.e., in-vivo codes using local terms and short phrases) about important details related to industry experience and/or instances where ideas or events related to industry experience were repeated across respondents (Miles et al., 2014). Then, upon encountering that detail in later text fragments, the analyst compared each successive instance of a code to previous instances to confirm or alter the definition of that code (i.e., the constant com-

parative method). After several rounds of reliability checking with another study team member and revision to the code list, the entire dataset was reviewed once more and instances of codes within the data were noted in a separate document. Analyses yielded four cultural scripts for teaching that captured respondents' generalized views on teaching, and five codes that referred to more specific sequences of classroom activities.

Limitations. Results should be read with several limitations in mind. First, both qualitative and quantitative data rely on respondent self-reports. Because these reports have not been validated by observation of actual teaching practices, they may or may not accurately reflect actual faculty behavior. Second, the self-selected nature of the sample (at the institutional and individual levels) precludes a generalization of the results to the larger population of educators in the four cities included in the study, and to broader populations in these disciplines. Furthermore, it is important to note that given the nature of these data (i.e., self-reported skills emphases in the classroom), it is not possible to draw conclusions regarding the specific pedagogical strategies being used or their ultimate efficacy with respect to student learning. This is a critical caveat, since prior work in this area has advanced claims that industry experience leads to specific classroom behaviors such as an emphasis on "soft skills" and the use of real-world anecdotes (e.g., Luft & Vidoni, 2000), but these (and our) studies are severely limited in their lack of actual classroom observations of teaching and their relationships to student outcomes (see Kane et al., 2002). Finally, the lack of multiple interviews with respondents requires putting considerable weight on a single interview, which may not be an accurate representation of their views over time.

Results

RQ#1. How many faculty have non-academic professional (i.e., industry) experience?

Results from analysis of survey data. Results from the survey indicate that 23.75% of faculty (*n*=265) reported they had not previously worked in their discipline's industry, whereas 56.63% (*n*=632) and 19.62% (*n*=219) reported less than 10 years and more than 10 years of industry experience, respectively (see Table 1). While comparisons with prior research are difficult given the lack of recent research on the topic, these results vary considerably from analyses of NSOPF data from 2004 (where 12.9% of faculty had industry experience) and 1988 (where approximately 50% of engineering and biology faculty had prior industry experience) (Fairweather & Paulson, 1996). Instead, our data suggest that about 3 out of 4 faculty have some previous industry experience.

Results from analysis of interview data. Here we briefly report the types of industry experience from a selection of respondents, to illustrate the specific career trajectories of some study respondents that are not available in the survey data (see Table 3).

Table 3. Selected Examples of Career Trajectories and Types of Industry Experience		
Pre-industry experience	**Type of industry experience**	**Educational position**
Petroleum engineering Master's degree	Halliburton petroleum engineer (25+ years)	Recruited to join faculty at Texas university
Petroleum engineering PhD	Chevron petroleum engineer (25+ years)	After a 2005 oil spill/accident, recruited to join Texas community college
Emergency medical technician, then nursing school	Trauma/ICU nurse in hospital (10-15 years)	Got MPH degree, recruited to join Texas university
K-12 teacher, then law school	Nurse in hospital (5-10 years)	Got MPH, recruited to join Texas university
Computer science Bachelor's degree	IBM software development (25+ years)	Retired, joined NC community college
Electrical engineering Master's degree	IBM network engineer (15-20 years)	Buyout from company, joined NC community college
Computer science Bachelor's degree	ATT software development (15-20 years)	Layoffs at company, joined WA community college
Computer science Master's degree	Microsoft software development (10-15 years)	Consulted after leaving company, joined WA community college

These data indicate that some faculty had considerable experience with non-academic workplaces and had ample opportunities to acquire industry-based norms and practices.

RQ#2. How much did faculty emphasize the five skills in their teaching practices?

Results from analysis of survey data. Table 2 includes descriptive statistics for measures of emphasis on teaching the five skills included in this paper (see Table 2). The relatively low mean scores for the teaching of the five skills suggest that faculty in our sample do not place a strong emphasis on them in their teaching, with most reporting that the survey items describing different instructional methods were between "minimally descriptive" (1) and "somewhat descriptive" (2) of their teaching. Faculty generally reported themselves as placing the highest emphasis on problem-solving (M=2.35, SD=0.82), followed by teamwork (M=1.95, SD=1.16), oral communication (M=1.77, SD=0.92), self-directed learning (M=1.61, SD=0.97), and written communication (M=1.54, SD=0.91).

Results from analysis of interview data. Of the 89 participants, 77 (86.5%) reported that they had recently taught transferable skills in their courses, which suggests that most faculty in our study sample felt that they emphasized one or more of these skills in their teaching. However, these results should be interpreted with caution since some faculty reported using techniques such as "groupwork" in response to the question, but without then specifying what specific skill(s) was being taught through groupwork. In other words, some faculty equated a teaching method (i.e., group work) with the underlying competencies that are hypothesized

to be practiced and/or learnt during that activity (e.g., teamwork). Research on the difficulties of actually teaching teamwork skills clearly demonstrates that this is not a valid assumption, and that explicit attention to teaching (and providing opportunities for practicing) a given skill is essential (Aarnio et al., 2010).

RQ#3. How, if at all, does industry experience (and other factors) influence how faculty emphasize and teach transferable?

To answer this question we report the results from HLM analyses of the survey data, but do not report the results of analyses of our qualitative data because qualitative analyses of the multi-faceted determinants of faculty teaching are best conducted with a focus on a single skill and/or a smaller dataset than is included in this paper (e.g., see Hora et al., 2019).

Results from analysis of survey data. In conducting the analysis of survey data, the independent variables of interest were categorized as individual, department, or institution-level factors that may influence teaching practices. The results from the HLM analysis of the data are included in Table 4, and here we highlight some key findings.

Table 4. Three-level HLM Estimates for Teaching of Cognitive, Intra-, & Interpersonal Skills					
	Written Communication	**Oral Communication**	**Teamwork**	**Problem-Solving**	**Self-directed Learning**
Individual-level Characteristics					
Industry experience	0.095	0.106	0.165	0.091	0.041
	(0.052)	(0.044)*	(0.064)*	(0.038)*	(0.059)
Future employers' expectations	0.058	0.083	0.132	0.128	0.073
	(0.033)	(0.040)	(0.047)**	(0.028)***	(0.033)*
Pre-existing course materials	−0.009	−0.034	−0.053	−0.043	0.010
	(0.026)	(0.023)	(0.034)	(0.026)	(0.023)
Expectations of colleagues desirable teaching methods	0.104	0.109	0.138	0.065	0.117
	(0.026)***	(0.021)***	(0.027)***	(0.026)*	(0.025)***
Size of the class	−0.020	0.063	0.005	0.006	0.038
	(0.021)	(0.026)*	(0.036)	(0.029)	(0.027)
Availability of resources (equipment, teaching assistants, facilities)	0.074	−0.005	0.050	−0.003	0.022
	(0.025)**	(0.024)	(0.035)	(0.029)	(0.028)
Characteristics of students in class	0.028	0.069	0.026	0.106	0.068
	(0.038)	(0.034)*	(0.039)	(0.029)***	(0.030)*
Familiarity with target course	−0.044	−0.077	−0.045	0.025	−0.030
	(0.029)	(0.033)*	(0.042)	(0.030)	(0.036)
Teaching experience	0.039	−0.029	−0.032	−0.042	−0.039
	(0.036)	(0.033)	(0.048)	(0.037)	(0.035)
Adjunct status	−0.026	−0.069	0.169	0.011	−0.058
	(0.074)	(0.061)	(0.075)*	(0.056)	(0.063)
Female	0.110	0.197	0.076	0.052	0.118
	(0.057)	(0.060)**	(0.064)	(0.050)	(0.059)*
Asian	−0.052	0.042	0.089	−0.180	0.098
	(0.100)	(0.105)	(0.129)	(0.089)*	(0.126)
Black	0.304	0.335	0.414	0.083	0.006
	(0.145)*	(0.143)*	(0.173)*	(0.140)	(0.159)
White	−0.204	−0.097	−0.156	−0.255	−0.254
	(0.104)	(0.087)	(0.116)	(0.080)**	(0.092)**
Department-level Context					
Information technology	−0.178	−0.160	−0.163	−0.020	−0.079
	(0.087)*	(0.086)	(0.094)	(0.074)	(0.075)
Health care	0.032	0.001	0.042	-0.059	0.093
	(0.130)	(0.087)	(0.090)	(0.114)	(0.096)
Advanced manufacturing	0.024	0.078	0.089	0.135	−0.005
	(0.091)	(0.091)	(0.124)	(0.083)	(0.100)
Institution-level Context					
Four-year institution	0.132	−0.099	−0.033	0.054	−0.271
	(0.072)	(0.069)	(0.078)	(0.066)	(0.087)**
Intercept	1.627	1.879	1.984	2.489	1.970
	(0.119)***	(0.121)***	(0.137)***	(0.092)***	(0.107)***
Random Effects					
Level 1 (within-department)	0.674	0.701	1.203	0.587	0.767
Level 2 (between-department)	0.060	0.022	0.011	0.034	0.023
Level 3 (between-institution)	0.004	0.011	0.000	0.000	0.030

Note: *$p < .05$, **$p < .01$, ***$p < .001$.

Individual-level characteristics. First, we found that industry experience was a significant and positive predictor of their teaching three of the five skills included in our study. This suggests that an educator with more experience working in industry or other professional non-academic settings were more likely to emphasize oral communication skills, teamwork, and problem-solving skills in their teaching in contrast to educators who had no such experience in the field.

Another individual-level attribute known to influence teaching behaviors is that of faculty perceptions of the institutional context (Trigwell & Prosser, 1991), and we found that consideration of expectations of their colleagues about desirable teaching methods were positively and significantly related to the five skills in our study. Additionally, faculty who reported being highly attuned to employers' expectations about graduate competencies appeared to prioritize teamwork, problem-solving skills, and self-directed learning. These results indicate that perceptions of the institutional context are influential factors that do influence how study respondents emphasize (or not) the five skills.

Other individual-level attributes of faculty that were significantly and positively associated with the teaching of the target skills included adjunct status, with these instructors emphasizing teamwork skills less than non-adjuncts. Respondents from different racial groups also revealed interesting patterns in their approach to teaching five skills. Asian faculty showed less emphasis on teaching problem-solving skills, Black faculty members tended to emphasize both communication skills and teamwork, and white faculty members were less likely to emphasize problem-solving and self-directed learning.

Department-level and institution-level contexts. Two objective measures of academic departments or entire institutions (i.e., not faculty perceptions) were included in the study – that of department or disciplinary affiliation, and also institution type (two- or four-year). At the department level, the only significant finding was that faculty in information technology placed significantly less emphasis on written communication than faculty in other disciplines. Otherwise, department did not have a substantial impact on the teaching of the five skills in this model. At the institution level, the only significant result was that educators at two-year institutions emphasized self-directed learning more than those at four-year institutions.

RQ#4. What are the skills-related cultural scripts for teaching obtained from instructors' industry experience?

The final set of data we report speaks to the central question of the nature and prevalence of specific cultural scripts for skills-focused teaching that faculty obtained from their industry experiences. First, we report results from analyses of survey data, which explored both the prevalence of five specific cultural scripts and individual, departmental, and institutional factors associated with their presence. Then, we report results from interviews that provide more fine-grained and emergent insights from the field.

Results from Analysis of Survey Data

Descriptive statistics from the survey data indicate that the three scripts most strongly linked to faculty industry experience were being provided with "real-world examples to use in the classroom" (M=3.33, SD=1.21), obtaining an "understanding of skills needed in industry" (M=3.3, SD=1.16), and enabling them to "give industry-related career advice" (M=3.24, SD=1.18). These scores reflect a scale where 4 indicated a "strong influence" between industry experience and the specific cultural script for teaching.

Table 5. Analyses of Cultural Scripts for Teaching Transferable Skills by Key Variables

	Shapes my understanding of skills needed in industry		Allows me to give industry-related career advice		Provides me with real-world examples to use in classroom		Allows me to introduce industry contacts to students		Gives access to industry resources for teaching	
	M *(SD)*	*n*	M *(SD)*	*n*	M *(SD)*	*n*	M *(SD)*	*n*	M *(SD)*	*n*
Total	3.3 (1.16)	919	3.24 (1.18)	916	3.33 (1.21)	915	2.53 (1.44)	918	2.3 (1.5)	918
Gender										
Male	3.27 (1.2)	260	3.18 (1.25)	259	3.27 (1.28)	260	2.42 (1.54)	260	2.2 (1.53)	260
Female	3.31(1.14)	652	3.27 (1.14)	650	3.35 (1.18)	648	2.57 (1.4)	651	2.34 (1.49)	651
Race										
Asian	2.71 (1.48)***	93	2.7 (1.5)***	93	2.69 (1.59)***	93	2.2 (1.63)*	93	1.88 (1.55)**	93
Black	3.57 (1.03)	46	3.5 (1.05)	44	3.56 (1.03)	45	2.87 (1.44)	46	2.89 (1.5)	45
White	3.35 (1.1)	706	3.3 (1.11)	705	3.4 (1.13)	703	2.56 (1.41)	705	2.31 (1.48)	706
Other races	3.37 (1.13)	67	3.27 (1.21)	67	3.3 (1.22)	67	2.46 (1.48)	67	2.4 (1.52)	67
Discipline										
Advanced manufacturing	3.74 (.68)	162	3.65 (.81)	162	3.72 (.79)	162	2.94 (1.28)	162	2.83 (1.3)	162
Health	3.4 (1.26)	104	3.41 (1.25)	104	3.47 (1.25)	104	2.72 (1.5)	104	2.55 (1.48)	104
Information Technology	3.34 (.97)	312	3.28 (.99)	312	3.35 (1.07)	310	2.38 (1.39)	311	2.07 (1.46)	311
Other disciplines	3.01 (1.38)***	334	2.95 (1.37)***	331	3.08 (1.41)***	332	2.4 (1.51)***	334	2.19 (1.57)***	334
Institution type										
2-year	3.7 (.72)	361	3.64 (.74)	360	3.75 (.7)	359	2.83 (1.31)	361	2.77 (1.35)	360
4-year	3.04 (1.31)***	551	2.98 (1.32)***	549	3.05 (1.38)***	550	2.33 (1.49)***	550	2 (1.52)***	551
Adjunct Status										
Adjunct	3.53 (.86)	336	3.47 (.92)	335	3.59 (.86)	334	2.62 (1.37)	335	2.45 (1.45)	336
Non-adjunct	3.16 (1.28)***	583	3.11 (1.28)***	581	3.18 (1.35)***	581	2.47 (1.48)	583	2.22 (1.52)*	582
Perception of Employer Needs										
Upper half-median	3.6 (.89)	485	3.55 (.93)	484	3.65 (.9)	483	2.91 (1.3)	484	2.74 (1.39)	484
Lower half-median	2.95 (1.32)***	434	2.9 (1.32)***	432	2.97 (1.39)***	432	2.1 (1.47)***	434	1.81 (1.48)***	434
Perception of Department Norms										
Upper half-median	3.41 (1.02)	415	3.35 (1.03)	414	3.47 (1.07)	413	2.67 (1.41)	414	2.5 (1.49)	414
Lower half-median	3.2 (1.26)**	500	3.15 (1.28)**	498	3.21 (1.31)**	498	2.39 (1.46)**	500	2.14 (1.5)***	500

Then, given the fact that certain variables were significantly related to skills-focused instruction (RQ2), we used t-tests and ANOVA (Tukey's HSD post-hoc tests) to evaluate if industry-based cultural scripts for teaching differ by these variables. The results indicate that there were no statistically significant differences between male and female educators across all five cultural scripts. However, the results indicate that these scripts were significantly different among racial groups, with Asian faculty more likely to report a weaker influence between their industry experience and all five cultural scripts than other groups. In addition, the "other discipline" category among disciplines, faculty at four-year institutions, non-adjunct instructors (i.e., tenure-track faculty), faculty reporting weak perceptions of employer needs, or those reporting weak perceptions of departmental teaching norms – generally had significantly weaker influences between industry experiences and the five cultural scripts included in our survey. Conversely, these results suggest that faculty reporting that these cultural scripts were present and strong in their teaching tended to be non-Asian, in certain STEMM disciplines, in 2-year institutions, were non-tenure track instructors, and had strong perceptions of employer needs and departmental teaching norms.

Results from Analysis of Interview Data

Next, analyses of interview data – which provided respondents with opportunities for offering new, original insights on their cultural scripts - revealed additional details about the nature of these scripts for teaching. The data show that faculty in our study conceptualized these cultural scripts in two distinct ways: (1) how industry experience shaped their generalized approach to or conceptions about teaching, and (2) how industry experience shaped their use of particular teaching methods. Further, the results are broadly consistent with the survey results in the emphasis of three of the five cultural scripts included in the survey (i.e., orientation to students' career success, attunements to skills need, use of real-world examples) (see Table 6).

Table 6. Skills-related Cultural Scripts for Teaching Approaches and Specific Teaching Methods Based on Industry Experience			
Cultural Scripts for Generalized Approaches to Teaching	**Description**	***Number***	**Involves "soft" skill?**
Emphasize students' future careers when designing course	Strong commitment to students' career success and ensuring course is career-related	4	N
Avoid "spoon-feeding" students information in classroom	Disinclination to teach in ways that "spoon-feeds" information since such thinking won't work in the workplace	3	N
Provide insights into employer skill needs	Firsthand experience with "soft skills" deficiencies leads to emphasis in classroom	2	Y
Tailor course to mimic industry certification exams	Experience doing training for industry certifications leads to similar teaching style	1	N
Cultural Scripts for Specific Teaching Methods	**Description**	***Number***	**Involves "soft" skill?**
Design classroom activities that simulate real-world situations	Instructor creates class projects and/or assignments to mimic workplace problems they've observed	8	N
Emphasize divergent thinking via open-ended problems and assignments	Instructor assigns open-ended problems to encourage divergent thinking instead of closed-ended assignments with single solutions	7	Y
Draw on storehouse of anecdotes (generally)	Industry experience provides instructor with a "storehouse" of anecdotes to tell in class	2	N
Mimic workplace cultural norms, skills, and habits	Instructor translates experience with workplace norms (e.g., digital device usage) into class rules	2	Y
Stay up-to-date on industry developments	Instructor brings current technologies and approaches from workplace into classroom	2	N

Cultural scripts for generalized teaching approaches. These cultural scripts refer to more general approaches or conceptions about teaching and student learning, which has long been a focus of postsecondary research on faculty cognition (e.g., Hativa & Goodyear, 2001). Here we report the two most frequently reported scripts for general approaches to teaching.

Emphasize students' future careers when designing course. For some instructors, industry experience shaped how they view the purpose of their teaching, which they determined was ultimately to help their students get a job after graduation. One computer science instructor described his teaching philosophy, which he attributed to a combination of his background and the fact his students were very career-minded, as being "very practical, this is what you're going to see when you get out, and so I'm not going to teach you anything vague or that you can read on your own."

For others reporting this cultural script, their backgrounds in non-academic careers and personal career trajectories informed a focus on career-related teaching. An advanced manufacturing instructor shared that, "one of the things missing from my career trajectory was that everybody was giving me academic knowledge, but not knowledge of how to get at job at the end." Having seen his students struggle during economic downturns and the "huge change in somebody's life" that even a short-term certificate could make, shaped a cultural script for ensuring that his courses featured hands-on learning that was "actually training people for jobs that exist in their industry." Thus, the emphasis on practicality and job-readiness was shaped by a combination of personal experience in industry, their particular students' goals, and the institutional context (i.e., a community college).

Avoid "spoon-feeding" students information in classroom. Some instructors also spoke of their desire to teach students in a way where they were forced to wrestle with complex problems, since this is the nature of the challenges they will face in the workplace. This sentiment, borne from spending time in non-academic workplaces, sometimes was shared in conjunction with statements about society, which one nursing professor characterized as one where, "we hold people's hands way too much." In response, this instructor felt that it was not her job to "spoon feed you because that's not the reality" of work in a hospital, where spontaneous decisions in novel situations are a daily occurrence.

Similarly, an engineering instructor stated that based on what he had learned in industry over the years, real-world problem-solving was the most critical skill he could impart to his students. This faculty felt that many students entered the program "wanting you to hold their hand and answer all the questions," but that he felt that they would best learn problem-solving (and the material) by "digging it up themselves" and not just memorizing for tests. Consequently, this cultural script provided an orientation towards practicality, student engagement, and the solving of non-formulaic problems and situations.

Cultural scripts for specific teaching methods. These cultural scripts refer to specific teaching strategies that respondents linked to their industry experience. Here we report the two most frequently reported scripts for specific teaching methods.

Design classroom activities that simulate real-world situations. The most frequently referenced industry-based cultural script for teaching specified routines for hands-on, authentic activities that simulated the workplace. In one case an engineering instructor created course projects that "simulate how an oil and gas company de-

velops project ideas," while a computer science instructor spoke about "trying to simulate the actual work environment that they're planning to go into as closely as possible." These sentiments were also echoed by nursing instructors, a field where simulations are a central part of the curriculum, especially with robotic patients used in clinical training. In each of these cases, the script involved first identifying the authentic situation or problem, followed by creating a hands-on learning activity aligned with the situation and the course material.

One engineering instructor, however, emphasized how it was not possible or even desirable to completely mimic the workplace in the classroom. This instructor spoke about the need to teach students general principles of heat exchangers, but not to learn about how to use a specific model of an exchanger or to use it in a specific application, because in industry there are a variety of models and applications. Further complicating matters was the fact that with fifteen or more students in each course, there wasn't time to fully train them to become proficient operators, so instead he saw his job as creating a "generalized teaching environment" that emphasized core concepts while providing opportunities for hands-on learning within a somewhat realistic environment. This suggests that this cultural script for some faculty was not solely about replicating workplace situations, but instead reflects a core commitment to creating classroom tasks that featured authentic situations.

Emphasize divergent thinking via open-ended problems and assignments. In psychology there is a distinction between two modes of thinking, especially in relation to creativity and problem-solving. One of these modes is divergent thinking, which refers to open-ended brainstorming and considerations of multiple solutions to a problem, in contrast to convergent thinking that is focused on finding the one "correct" solution to a problem (e.g., Colzato et al., 2012). Several respondents in our study spoke about how their experiences in the workplace with complex, open-ended and ill-framed problems led to a conviction that students should develop divergent thinking skills, as they were particularly well-suited to dealing with the types of situations students would encounter in the workplace.

In the case of nursing, one instructor emphasized that this type of thinking was essential in health care given the diversity of patients and conditions possible. The instructor stated that, "I might lecture for three hours telling you what to do but mostly I need you to know why, because in real-life every patient is different and if I tell you all the stuff and you memorize it, that's not going to work for every patient." Another instructor teaching an engineering course observed that "you can't give students a canned exercise with a closed-ended solution," because in the workplace they need to develop a "project management philosophy" where they solve complex, open-ended problems within certain constraints.

Again, this script entailed a sequence of activities that began with the industry-related situation in which a skill was being used as a referent for instructional design, followed by the selection of problem-solving activities that were open-ended and authentic. Specific techniques used by faculty describing this script included Socratic lecturing where students are guided to explore different ways of solving problems, simulations (especially in clinical nursing courses), assignments and/or story problems that require students to explain their reasoning and/or can be solved in multiple ways, and so on. In this way, these instructors acquired a cultural script from their time working outside of academia that emphasized the value of a particular way of thinking and problem-solving, and which contains an implicit distaste for multiple-choice, closed-ended tests and assignments.

Discussion

Finally, we consider the question that opened our paper - Why do postsecondary faculty teach the way they do, particularly when it comes to emphasizing transferable skills (or not) in the classroom? Besides contributing new evidence on this topic as well as the prevalence of industry experience and transferable skills instruction among the professoriate, we suggest that a person-centered cultural perspective holds great promise for understanding the dynamics between agentic behavior and postsecondary settings. In this final section we highlight key contributions of our study to the literature, and consider the potential of training and supporting the use of industry-related scripts for teaching transferable skills, while also recognizing that such scripts can encode ideologies of identity, power, and neoliberalism that are inimical to the projects of social justice and a truly liberal education.

New Evidence on Prevalence of Industry Experience among Postsecondary Faculty

First, our study provides new data on the basic question of how many faculty have experience working in non-academic workplaces –56.6% (n=632) reported less than 10 years while 19.6% (n=219) had more than 10 years of industry experience. While comparisons with prior research are difficult given the lack of data on the topic, these results vary considerably from analyses of NSOPF data from 2004 (where 12.9% of faculty had industry experience) and 1988 (where approximately 50% of engineering and biology faculty had prior industry experience) (Fairweather & Paulson, 1996). The fact that our sample includes a large number of faculty from professional programs (e.g., nursing) and two-year institutions – where in some cases industry experience is required to get a job – should be taken into account when interpreting these data. Ultimately, three out of four of these STEMM faculty had some industry experience, representing a large cohort of instructors who presumably had some acculturation experiences in the instructional norms of a non-academic workplace.

New Evidence on Prevalence and Predictors of Skills-focused Instruction

One of the primary contributions of this study is the documentation of how much faculty emphasize transferable skills in the classroom, which has become a national priority in postsecondary policy and practice (NACE, 2022; Savitz-Romer et al., 2015). The data indicate that faculty generally did not place a strong emphasis on teaching these skills in the classroom and described different skills-focused modes of teaching as being "minimally" or "somewhat" descriptive of their teaching. Specifically, faculty placed the highest emphasis on problem-solving (M=2.35, SD=0.82), followed by teamwork (M=1.95, SD=1.16) and oral communication (M=1.77, SD=0.92), with averages on the low end of the 1-5 point scale denoting the alignment of their actual practice with statements about specific pedagogical strategies. Thus, among this sample skills-focused instruction is not the norm.

These results indicate that considerable room exists for improvement, making the question of precisely who *is* emphasizing transferable skills and why a critical one, as perhaps these individual and organizational attributes could be replicated, emphasized, or supported. However, our findings are consistent with situative views of instructional practice that highlight the varied and multi-dimensional influences on teaching (e.g., Lattuca & Stark, 2011; Shavelson & Stern, 1981), such that no single variable (e.g., industry experience) uni-

laterally dictates teaching behaviors, rendering policies that focus exclusively on hiring faculty with industry experience incomplete and misguided (e.g., Beck, 2015; Chan, 2018).

Instead, we found that individual attributes (e.g., race, gender, adjunct status, industry experience, familiarity with a course), disciplinary affiliation, institution type, and perceptions of organizational (e.g., peer norms for teaching, class size, resource availability, student background) and external contexts (e.g., future employer expectations) each were significantly associated with emphasizing one or more of the transferable skills in our study. While the number of influential factors here may be discouraging for those seeking parsimonious explanations of behavior (and likely targets for reform), our data do reveal that specific variables are especially influential and bear further investigation in the future.

For instance, a key finding from our paper is that industry experience does increase an instructor's emphasis on transferable skills. Our quantitative results indicate that industry background is significantly associated with emphasizing oral communication, teamwork, and problem-solving, while our qualitative data reveal that such experience provides instructors with cultural scripts related to their general pedagogical orientation as well as specific techniques for teaching specific skills like problem-based learning. This evidence supports the idea that acculturation in a non-academic workplace does provide a person with certain habits, beliefs, or cultural scripts related to transferable skills – suggesting future lines of inquiry such as observational studies of former industry professionals' classroom teaching practices and if/how traditionally trained academics (i.e., graduate school) could be provided with opportunities to acquire industry-based scripts for teaching (e.g., externships). However, we caution that our findings indicate that other factors – particularly individual identities and perceptions of localized constraints – may be more productive avenues for future study.

For example, racial identity and gender were also significantly associated with teaching transferable skills. Compared to faculty in other racial groups, Black instructors were positively and significantly associated with emphasizing written and oral communication and teamwork, while Asian and white instructors were negatively associated with teaching problem-solving, with white instructors also less inclined to teach self-directed learning skills. While considerable research exists on how a person's racial identity affects how their "soft skills" are perceived (e.g., Moss & Tilly, 1996), and how instructors' race may impact how students view them and vice versa (e.g., Ford, 2011), no research yet exists on how race impacts instructors' relative emphasis on transferable skills. While future research should pursue this question, we draw attention to the prospect that identities such as race and gender - both of which implicate unique worlds, experiences, and self-perceptions in which people are acculturated – should be included in questions about skills-focused instruction. This is important to not only discern potential variability in how different groups may emphasize teamwork or communication, but also to be cognizant that internalized notions of "appropriate" or "professional" forms of skill may encode sexist, racist, or other discriminatory ideologies from home communities (Hora et al,, 2019; Moss & Tilly, 1996; Ray, 2019).

Furthermore, decisions about whether to emphasize certain skills do not occur in an institutional vacuum, and while the data show that objective structural elements like institution type do impact skills-focused teaching, here we highlight the perceptual part of the equation – how faculty as active agents perceive socio-cultural constraints and affordance in their institutions for teaching in particular ways. For instance, the expectations of two groups of people – departmental colleagues and employers –exert a strong influence on

faculty decisions, confirming prior research on the potency of perceived disciplinary norms regarding teaching (Hora & Anderson, 2012; Stark, 2000) and what outside observers expect from newly hired graduates (Benbow & Hora, 2018). In this way, neither structure nor agency alone dictate practice, but the instructors' perception of the normative space enveloping their courses and students exert as much – if not more so – influence as elements that are commonly addressed via instructional reforms (e.g., pedagogical techniques). This may be especially the case with discipline-based norms, as faculty in health-care fields reported higher levels of emphasis on transferable skills, which is unsurprising given the emphasis on these competencies in medical education (e.g., Back et al., 2007).

Thus, a combination of identity, experience, and perceived affordances intersect to shape instructional decisions, but transferable skills are weakly emphasized among this sample of faculty. This raises a question central to our paper - for those who do emphasize transferable skills, which cultural scripts do they deploy and what predicts their use?

New Evidence on Cultural Scripts Use to Teach Transferable Skills

One of the key findings regarding cultural scripts from our study is how they refer to both preparatory planning influences and routines as well as in-class teaching scripts, echoing prior work on teacher cognition that demarcates these two distinct yet related spheres of activity (Shavelson & Stern, 1981; Stark, 2000). For instance, the scripts included in the survey – derived from a pilot study where faculty stated the primary ways industry experience influenced their teaching – variously refer to underlying conceptions of teaching (e.g., shaping my understanding of skill needs; M=3.3, SD=1.1) or opportunities (e.g., provides access to industry resources for teaching; M=2.3, SD=1.5) that impact curricular design, and also specific in-class pedagogical approaches (e.g., provides me with real-world examples to use in classroom; M=3.3, SD=1.2). Similarly, interview-based scripts capture information that could inform the design of a course (e.g., providing insights into skill needs), what some may call an instructors' general "approach" to teaching (e.g., avoiding "spoon-feeding") (Trigwell & Prosser, 1991), and also in-class instructional techniques and routines (e.g., simulations of real-world situations, open-ended problems).

These data lead to four conclusions. First, in affecting their selection of pedagogical techniques *and* their orientation to the general task of preparing a course – as one that should address employer skill needs and students' future careers – industry experience appears to provide what Nespor (1987) called "existential assumptions" about the nature of teaching and learning itself that are decidedly vocational. While such an orientation could be beneficial in providing specific, hopefully up-to-date insights into employers' skill needs as opposed to vague declarations about "soft" or "career-ready" skills, the field should also be cognizant of the potential risks that such assumptions may have in perpetuating neoliberal conceptions of students themselves as "bundles of skills" to sell in the labor market (Urciuoli, 2008).

Second, some of these scripts strongly emphasize the value of real-world examples and problems in classroom teaching, which is a key element of effective active learning modalities such as problem-based learning (Chi & Wylie, 2014). Identifying authentic situations that are pedagogically promising and tied to course content can be challenging, making these scripts and associated insights especially valuable. This is especially the case with transferable skills instruction, where proven activities such as role-play simulations which

rely on real-world situations (e.g., Back et al., 2007). Consequently, institutions should consider engaging former (and active) industry professionals in identifying these scripts, and providing opportunities via externships, project databases, or faculty development workshops to gain firsthand knowledge of cultural scripts in the workplace (Wagner et al., 2021).

Third, an unanticipated finding in the study was the focus on mentoring and advising embedded within cultural scripts such as emphasizing their careers during the design phase and providing industry-related career advice. Given evidence that just one in six college graduates report visits to their campus career services offices were helpful (Auter & Marken, 2016), faculty play a critical resource in advising students on their future careers and those with industry experience may be well-positioned to provide such advice (see also Wagner et al., 2021). While this development is promising, the fact that mentoring requires considerable effort and expertise to be effective raises questions on whether institutions should provide additional training to former industry professionals teaching in higher education.

Finally, as was the case with emphasizing transferable skills in the classroom, a variety of individual attributes and perceptions of contextual factors influence the use of these scripts, reinforcing the prospect that additional identities and situations should be taken into account when considering the relationship between industry experience and teaching. For instance, the influence between industry experience and all five cultural scripts was generally weaker for Asian faculty than all other racial identities, reinforcing the notion that the intersections among race, identity and instructional scripts should be explored in future research. Additionally, the "other discipline" category among disciplines, faculty at four-year institutions, non-adjunct instructors (i.e., tenure-track faculty), faculty reporting weak perceptions of employer needs, and those reporting weak perceptions of departmental teaching norms – all had significantly weaker influences between industry experiences and the five cultural scripts included in our survey. Conversely, these results suggest that faculty reporting that these cultural scripts were present and strong in their teaching tended to be non-Asian, in certain STEMM disciplines, in 2-year institutions, were non-tenure track instructors, and had strong perceptions of employer needs and departmental teaching norms.

Overall, the data highlight the utility and necessity of frameworks attentive to the situational and intersectional nature of instructional work, and how identity, situations, *and* experience impact the existence and deployment of cultural scripts for teaching.

Utility of Cultural Scripts Theory for Studies of Instructional Decision-making

Finally, we briefly consider the potential of cultural scripts theory for studies of teaching in higher education. We agree with scholars in anthropology (e.g., Abu-Lughod, 1991) and education (e.g., Ball & Ladson-Billings, 2020) who object to the culture construct as a referent to a static grab-bag of indicators universally embraced by entire populations or institutions, and instead argue for a perspective that accounts for three inter-related elements: (1) shared systems of behavior, belief, artifact, and meaning-making within specific communities (Gutiérrez & Rogoff, 2003; Van Maanen & Barley, 1984), (2) individual internalization of cultural information from membership in various communities (Strauss & Quinn 1997), and, (3) institutional instantiation and reproduction of these individualized (Lizardo, 2004) and shared meanings (Ray, 2019). Ultimately, we contend that cultural scripts theory is a robust and promising approach to study the problem of how

culturally shaped predilections for teaching travel via individuals from place to place, and how new workplace contexts may support or reject these "imported" routines for teaching.

One of the benefits of this approach is to provide researchers with conceptual and empirical precision regarding units of analysis for studying cultural aspects of teaching. Instead of vague references to the "culture" of a classroom or institution, it becomes possible to document scripts such as sequencing material in a syllabus (Stark, 2000) or answering student questions in the classroom (Shavelson & Stern, 1981) via self-reports or observational studies as instantiations of culture (e.g., Ferrare & Hora, 2014). Documenting changes in these behaviors over time could also shed light on processes of initial enculturation or resistance to assimilatory pressures, and a promising approach to studying such changes was recently proposed by Grunspan and colleagues (2018) in an account drawing on ideas similar to Harris's cultural materialism (1968), where instructional decisions evolve in processes akin to natural selection governed by institution (e.g., research universities) and role (e.g., tenure-track positions) types that ostensibly favor didactic lecturing. However, we suggest that biological metaphors used to explain changes in teaching overlook scripts obtained via non-academic sources (e.g., identity, industry experience), agentic behavior within role and institutional constraints, the role of power and ideology encoded in ideational and structural forms, and how these elements interact in practice.

Further, a focus on cultural scripts and how they are conceptualized and enacted at the level of individual faculty grounds discussions of culture in specific pedagogical situations, and what anthropologists call "emic" or insider conceptions of activity, as opposed to abstracted notions of academic culture or outsider accounts of cultural life. Instead, a cultural scripts approach helps us to see how Professor Leopold's prior experience as an engineer at Exxon Mobil in Houston informed their habit of grounding problem sets in common workplace problems (e.g., pressure buildups in wells) faced on offshore oil rigs whenever they taught Intro to Geophysics 101. Besides being consistent with anthropological views of culture, such attention to the granularity of everyday practice has implications for the problem of increasing the prevalence of transferable skills instruction.

Furthermore, given evidence that educators' professional development is especially effective when grounded in authentic disciplinary situations (e.g., Grossman et al., 2009) instead of instruction in abstracted techniques (e.g., active learning), faculty developers should include disciplinary scripts in workshops on pedagogical methods. Ultimately, we argue that building faculty's repertoire of industry-referenced cultural scripts for transferable skills instruction should be an institutional priority (Wagner et al., 2021). Whether these "toolkits" are developed from prior industry experience or externship experiences, without a cognitive storehouse of real-world instructional scripts, transferable skills instruction risks becoming ineffective in its lack of authenticity (Auther et al., 2021; Back et al., 2007).

Finally, future research should explore the prospect that cultural scripts are a critical link between organizational actors and the institutions in which they function, a dynamic that contributes to the perpetuation or change of policy, practice, and power dynamics. Individual-level scripts (Gioia & Poole, 1984) or cognitive schemata (Ray, 2019) provide the beliefs, ideologies, and knowledge that inform the creation and reproduction of institutional structures such as silo-ed academic departments, tenure and promotion policies, and other structural facets of postsecondary life (Clark, 1983). Documenting and tracking the ways that new and/or evolving cultural scripts interact with pre-existing structures thus has the potential of illuminating subtle mechanisms of change processes (or lack thereof). Further, the processes whereby a new entrant's scripts

are aligned with institutional norms (i.e., perpetuation of the home culture), discordant and requiring adjustment or new learning (i.e., enculturation to new norms), or are rejected outright by the new environment (i.e., assimilation pressures) are relevant not only to the present question of instructional behaviors, but also how historically marginalized students, staff, or faculty experience higher education. While assimilationist norms in higher education have long been critiqued for their embrace of white normativity (e.g., Tierney, 1999), evidence suggests that students of color continue to face distress and alienation in institutions that fail to create spaces for their unique cultural scripts and identities (e.g., Cano & Castillo, 2010), highlighting how structure-script dynamics may be the key to organizational stability or evolution (Gioia & Poole, 1984).

At the same time, it is important to recognize that not all newly introduced scripts (and their originating home cultures) are desirable for a program of social justice and liberal education (Ferrare & Apple, 2015; Harris & Patton, 2019), especially in the case of transferable skills which are particularly susceptible to discriminatory views of "appropriate" behavior and/or racial or gender stereotypes (e.g., Hora et al., 2021; Moss & Tilly, 1996). As a result, while industry-related cultural scripts do appear to have a beneficial impact on transferable skills instruction in the classroom, the field must be attentive to the prospect that these scripts can also encode racist ideologies (Ray, 2019) or marketized views of students' personhood (Urciuoli, 2008). These concerns should thus give pause to those advocating for an expansion of skills-focused instruction throughout the postsecondary sector.

Conclusions

Concerns about the career readiness of college graduates shows no signs of abating, and the evidence we report in this paper that industry experience appears to enhance the teaching of key transferable skills *and* deepen an instructors' repertoire of real-world instructional scripts may reinforce calls for hiring more faculty with industry experience (Chan, 2018; Fairweather & Paulson, 1996) or sending them on industry externships (Kinsella & Waite, 2021). Before heading down this path, however, we encourage more research on the various factors associated with skills-focused instruction (e.g., race, gender, perceived affordances) to discern the actual impact of industry experience, and observation-based studies of the cultural scripts for teaching specific skills to see whether industry immersion (or perhaps day-long workshops) are required to internalize these techniques.

In short, the field must guard against the tendency to grasp at edu- or managerial fads that promise quick fixes, of which faculty with industry experience appears to be at first glance (Birnbaum, 2000). This is especially true in the case of transferable skills, which is a discourse plagued by ambiguity, hype, and the lack of a critical perspective (Hora, 2023). Instead, the field of higher education needs to pay far more attention to a fundamental issue that if overlooked, makes industry experience moot – the inadequate pay, training, and institutional support of an increasingly contingent teaching workforce (Kezar et al., 2019). Further, while our students' financial futures and career aspirations are undoubtedly important, in an era of rising authoritarianism and an existential climate emergency, academic programs should be incorporating democracy (Tierney, 2022) and climate education (Beaudoin & Brundiers, 2017) as much as career-ready skills into their curriculum, instruction, and mission statements.

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[i] The term "faculty" is used in this article to refer to all people – whether full- or part-time, tenure-track or non-tenure-track – who hold positions that involve teaching courses within a college or university. We sometimes also use the term "instructor" to refer to participants in our study.

[ii] Given the problematic nature of each of these terms, where "soft skills" implies easy and/or emotionally laden competencies and "non-cognitive" suggests the lack of engagement with cognitive properties, in the remainder of this paper we will refer to skills as "transferable".

[iii] The inclusion of medicine into the more common acronym of STEM is increasingly apparent in national reports such as the National Academy of Sciences 2019 report on "The science of effective mentorship in STEMM."