

Cultural Capital at Work: How Cognitive and Non-Cognitive Skills Are Taught, Trained and Rewarded in a Chinese Technical College

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Cultural Capital at Work:

How Cognitive *and* Non-Cognitive Skills Are Taught, Trained and Rewarded

in a Chinese Technical College

Matthew T. Hora and Chelsea A. Blackburn Cohen

In a sun-filled lecture hall at a technical college on the eastern coast of China, a recruiter from a local pharmaceutical company showed a slide to a gathering of biology students about how to get a job. In bold letters the slide explained what PharmaCo (a pseudonym) was looking for: a plain and simple resume, good manners, confident talking, and diverse competencies. After reading through these requirements, the recruiter emphasized the importance of interpersonal skills, and how the lack of competencies such as communication and teamwork were difficult to hide because “a fancy suit or makeup won’t cover up these shortcomings.”

This campus recruiting event, which one of the authors (Hora) observed during fieldwork at the Eastern Chinese Technical College (ECTC, a pseudonym), illustrates one of the predominant concerns facing community and technical colleges¹ around the world: student employability. While broad-access higher education has long focused on ensuring students that are prepared for the workplace, since the Great Recession of 2008 decimated millions of jobs and hindered global economic growth, technical colleges have become widely seen in both the United States and China as one of the primary venues for developing a skilled workforce for an increasingly competitive 21st century economy (Carnevale, Smith, & Strohl, 2013; Wang & Jiang, 2013).

This focus on technical colleges as a solution to a nation’s workforce problems is based in part on claims that millions of jobs that don’t require bachelor’s degrees (i.e., middle-skill jobs) regularly go unfilled because employers cannot find skilled applicants (Holzer & Lerman, 2007; Molnar, Wang, & Gao, 2015), while almost half of all graduates from 4-year universities are underemployed, stifling economic growth and students’ long-term prospects (Abel, Deitz, & Su, 2014; Li, Whalley, & Xing, 2014). Consequently, some observers have concluded that policymakers should steer students toward vocational programs in “hot” fields such as computer programming and nursing, and away from 4-year institutions in general and arts and humanities majors in particular (Sullivan, 2012; Wang, 2013). This recent focus on the value of and apparent need for vocational education has led to significant efforts in both the United States and China to increase students’ acquisition of sub-baccalaureate credentials, and to provide students with a seamless pathway or pipeline towards completing their programs and transitioning into the labor market (Cleary, Kerrigan, & Van Noy, 2017; Qiang & Zhigang, 2016). Indeed, the focus on

¹ In this paper we refer to vocationally oriented institutions as “technical colleges,” following the nomenclature used in China for institutions of higher education whose mission is primarily vocational preparation.

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human capital development and fixing college-to-work pipelines has achieved the status of a “frame” in the policy and workforce development worlds, or a narrative that organizes collective experience by diagnosing situations and prescribing action (Benford & Snow, 2000).

But is the metaphor of a pipeline—which connotes an unproblematic and linear transition from postsecondary education to the labor market largely dependent on acquiring an “in-demand” credential—the best way to think about the role that technical colleges play in facilitating student transitions from college into the workforce? The notion of education as a pipeline can be traced to a model of industrial production where structural or technical reforms to supply chains, factory design, and manufacturing processes lead to greater efficiency and profitability (Grubb & Lazerson, 2004; O’Brien & Deans, 1996). In an educational context, structural reforms and efficiencies can be seen as essential to supporting student persistence in college and ultimately their acquisition of a credential, which has considerable implications for their future earnings and social mobility (Carnevale et al., 2011). Additionally, the theory of human capital, which explains variations in employment outcomes as the product of investments in educational attainment and/or “cognitive” skills (e.g., numeracy and literacy knowledge) (Becker, 1964), has led to a focus on completion and structural “alignment” between college and the labor market (Cleary et al., 2017). The widespread adoption of a pipeline perspective for postsecondary education has led to a focus on structural reforms in academic programs and student advising so that students have clear pathways to graduation and the acquisition of a credential that is closely linked to an in-demand occupation (Bailey, Jaggars, & Jenkins, 2015).

However, the view of the relationship between education and the workforce as a talent supply chain is not without its critics. The human capital approach has been critiqued as inadequately accounting for non-monetary resources such as social and cultural capital that impact a person’s employability and social position (Bourdieu, 1986), how employers view credentials as signaling both technical and non-technical skills (Stiglitz, 1975), and for ignoring the role of employer’s decision-making processes when hiring (Bills, 2003; Rivera, 2012). The focus on credentials and structural reforms can also be critiqued for overlooking the role that “non-cognitive” (e.g., communication, work ethic) skills play in students’ academic and labor market outcomes (Farkas, 2003; Heckman, 2000), and the important role that instructional methods play in cultivating these varied competencies and dispositions (Hora, Oleson, & Benbow, 2016). This is not to suggest that the completion agenda is misguided, as the 39% completion rate in U.S. community colleges merits immediate attention (Shapiro et al., 2017). Instead, these critiques underscore the idea that students’ acquisition of skills, knowledge and abilities valued in the labor market is not solely a structural matter or problem of inadequate pipelines and pathways.

Yet little research exists on the role that cultural capital and non-cognitive skills play in technical college student transitions to the workforce. In this paper we report findings from an exploratory case study that investigated how a group of educators and employers in an eastern Chinese city conceptualized and employed “embodied” forms of cultural capital (e.g., skills, dispositions, and aptitudes) in their teaching, hiring and training activities. In doing so, we build

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upon a cultural account of college-workforce relations by focusing on how cultural capital is cultivated via pedagogic processes and employed as part of screening procedures when students strive to gain entry into new cultural fields such as the workplace (Bourdieu, 1986; Fligstein & McAdam, 2012; Lareau & Weininger, 2003).

What is the benefit of examining these issues in China? Besides the fact that China is the world's second largest economy and an increasingly influential player in global higher education, the country, not unlike the United States, is in the midst of debates about skills gaps and talent pipelines (Qiang & Zhigang, 2016). Insights into challenges facing technical college administrators, educators, and students in other cultural contexts has the potential to reveal the often tacit cultural and structural forces that shape educational practice and student outcomes (Bartlett & Vavrus, 2017; Mendoza, Suarez, & Bustamante, 2016).

Based on analyses of institutional documents, in-depth interviews and classroom observations, we contribute new insights into the cultural underpinnings of the college-to-work transition in general, and how these unfold in a Chinese technical college in particular. Findings include phenomena that corroborate research from U.S. contexts, including the importance of both cognitive (i.e., knowledge, reasoning skills) and non-cognitive (i.e., communication, work ethic) competencies, reform initiatives advocating active learning instructional methods in the college classroom, general education being highly valued, the importance of "cultural fit" during the hiring process, and a social bias favoring white-collar work over blue-collar occupations. However, some findings appear to be unique to the Chinese context (e.g., a view of work ethic as allegiance to craft and society, a deep-seated cultural norm of didactic lecturing and rote memorization), while others are certainly specific to China (e.g., educational reforms emanating from a central government, Confucian ideals of loyalty and vocation). Based on these findings we offer a new conceptual model for the role of cultural capital in student transitions from college to work, and consider implications for future policy, research, and practice in both the United States and China.

Background

In this section we provide a brief overview of some of the ideas and debates that are salient to the analysis of college to workforce dynamics. This review touches upon theories in social science regarding the relationship between educational attainment and the labor market, the role of technical colleges in debates about the skills gap, and the history of Chinese higher education in general and vocational education in particular. We conclude the section with an overview of our approach to the investigation of these issues.

Ways of Conceptualizing Higher Education-labor Market Dynamics

The relationship between educational attainment and labor market outcomes has long been a topic of interest to sociologists, labor economists, and education researchers. In exploring this complex relationship scholars have developed a variety of theoretical perspectives and research methodologies. We briefly review some of the most influential approaches that have shaped

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current debates about student employability and the role that technical colleges may play in labor market outcomes (see Table 1).²

Table 1. Influential Theories of the Relationship Between Education and Labor Market

Theory	Key ideas	Seminal thinkers
Human capital	Different levels of education/cognitive skills explain variation in wages and productivity	Becker, 1964
Signaling	Job seekers signal competence via educational credentials	Spence, 1973
Cultural capital	Cultural resources in embodied, institutionalized and objectified forms act as “social currency” to purchase privilege, position and power	Bourdieu, 1986
Non-cognitive skills	Employment outcomes are determined not only by cognitive skills but also by personality traits, habits and interpersonal skills	Heckman, 2000; Farkas, 2003

One of the most influential theories in both research and skills-related policy is that of human capital, which posits that investments in marketable skills and education pay dividends in the labor market via increased productivity and personal incomes (Becker, 1964). According to this view, to improve social mobility and stimulate the economy, investments in education and training should be a priority. This perspective is often supported by references to the wage premium enjoyed by those with increased education (Goldin & Katz, 2007). While some critique the field for ambiguously defining education and skills, researchers often use cognitive ability as measured by IQ, years of schooling, education credentials, or achievement test scores in math or reading as proxies for educational attainment (Heckman, 2000). This focus on education and cognitive skills as the primary predictor of productivity and wage growth underlays many of the contemporary approaches to addressing workforce development and skills-related issues (Cleary et al., 2017).

But many alternative explanations to the human capital approach exist. For instance, some theorists posit that hiring is akin to a “lottery” insofar as employers are never certain about an applicant’s real competency levels (Spence, 1973, p. 356). Signaling theorists consequently emphasize how employers determine wages based on distinct “signals” that applicants display to hiring managers—alterable (e.g., education, skill levels) and unalterable characteristics (e.g., race, age)—along with considerations of anticipated productivity (Spence, 1973). Researchers have also emphasized the importance of social networks and ties as an important factor leading

² Given space limitations, a thorough review of these extensive literatures cannot be provided. Readers may review articles and book chapters such as Bills (2003) and Cleary, Kerrigan, & Van Noy (2017) for surveys of the major schools of thought active in the study of education and labor market outcomes.

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to a person's employment, especially for low-income youth operating in complex, industrialized labor markets (Rosenbaum, Kariya, Settersen, & Maier, 1990). Bills (2003) later argued that the human capital school ignored the fact that labor market outcomes (e.g., wage and status attainment) are "contingent on a hiring transaction" (p. 442), and that nuances of employer decision-making should be studied in greater detail. Later research on how hiring managers consider applicant "fit" with organizational cultures (Rivera, 2012), and the role that class markers play in shaping hiring decisions (Rivera & Tilcsik, 2016), underscores the fact that hiring is not simply an objective evaluation of credentials.

Another critique of the human capital school is that the focus on cognitive skills alone is misplaced. Instead, non-cognitive skills (i.e., competencies such as conscientiousness and teamwork) that are not captured by years of schooling or standardized exams, are viewed as critical predictors of academic success, wage and employment outcomes, and even health outcomes (Farkas, 2003; Heckman, Stixrud, & Urzua, 2006). In research on stratification processes, scholars have also investigated the role of non-cognitive skills such as work habits (Farkas, Grobe, Sheehan, & Shaun, 1990) as well as factors such as "social know-how" or the knowledge required to navigate complex institutional systems (e.g., a technical college) (Deil-Amen & Rosenbaum, 2003). These converging bodies of research are leading to what Farkas (2003) calls a "new paradigm" of research on school and workforce outcomes that accounts for both cognitive skills and "patterns of habitual behavior, particularly the extent of conscientiousness or good work habits, developed from birth through adolescence" that some call non-cognitive competencies (Farkas, 2003, p. 556).

Perhaps most salient to this paper is the critique that human capital theory reduces the social world to an ahistorical "mercantile exchange" (Bourdieu, 1986, p. 46). Instead of accounting for the role of political, cultural and social forces and resources in shaping people's futures, the human capital account focuses solely on quantifiable, monetized variables (e.g., costs of schooling, wages, productivity). In viewing educational qualifications or cognitive skills as the primary determinant of social and labor market stratification processes, the human capital perspective overlooks the impact of power dynamics and the influences of cultural and social capital (Bourdieu, 1986). In particular, Bourdieu (1986) emphasizes how cultural capital—in concert with the field (i.e., social, political and historic context) and one's habitus (i.e., personal dispositions)—acts as a form of social currency to "purchase" one's position, privilege, and power. While cultural capital can take *objectified* (e.g., paintings) or *institutionalized* (e.g., credentials) forms, in this paper we focus on *embodied* forms of cultural capital. Embodied cultural capital refers to dispositions, knowledge and habits, that take considerable time to develop and acquire, much like a "muscular physique or a suntan" (Bourdieu, 1986, p. 48). An important idea in Bourdieu's field theory is that interpretations of the relative value of cultural capital is not objective, but instead depends on the "strategic interests of the agent" (Lareau & Weininger, 2003, p. 582), which in the case of this paper include educators and employers.

Finally, a critical perspective of education-workforce relations emphasizes how economic outcomes such as employment and wages are not determined solely by educational credentials,

but are also strongly influenced by the broader political, historical, and social contexts in which students, teachers and employers live, study and work (Bills, 2016). A critical focus highlights differential educational opportunities afforded to students of different class and racial groups (Bourdieu, 1986), the potential for discrimination in hiring processes (Rivera & Tilcsik, 2016), and the prospect that only particular perspectives (e.g., employers) shape debates about skills gaps and technical colleges (Cleary et al., 2017). Essentially, a critical perspective problematizes discussions about college, skills and jobs in ways that are not commonly seen in current debates, which tend to focus exclusively on employer and market needs.

The Role of Technical Colleges in Debates About College-to-work in the United States

Regardless of the specific role that postsecondary education and credentials play in shaping people's job prospects and wage outcomes, the notion that education is a primary (if not the sole) solution to social and economic problems is widespread. Known as the "Education Gospel" this argument takes as a given that education is a good thing, and that investments (both personal and societal) in education will yield positive outcomes (Cottom, 2017; Grubb & Lazerson, 2004). Setting aside for a moment potential issues with this view, one of the defining characteristics of the post-recession era in the United States was a widespread embrace of technical colleges as the linchpin to the nation's economic problems. This is based on the notion that bachelor's trained graduates have flooded the labor market, but that millions of "middle-skill" jobs that require more than a high school diploma but not a 4-year degree go unfilled. For analysts focused on these middle-skill jobs, boosting the economy and providing students with opportunities for social mobility is largely a matter of funneling more students into 2-year colleges and vocational programs (Holzer & Lerman, 2007; Sullivan, 2012).

With the dual concerns about student success and workforce development endemic in the media and among policymakers, a considerable amount of attention is currently being paid to figuring out how to improve student success and program completion in U.S. technical colleges. Responses range from providing free access to community and technical colleges, addressing student food insecurity with campus food pantries (Nellum, 2015), and transforming institutional structures to provide "guided pathways" to enhance completion rates (Bailey et al., 2015). The latter focus on restructuring colleges is particularly influential as the provision of a guided pathway—via integrated academic and career advising, clear course sequences, and more hands-on instruction—is being adopted across the United States (Jenkins, Lahr, & Fink, 2017). These efforts are informed by a conviction that technical and community colleges play a critical role in providing students (particularly those from low-income backgrounds or marginalized populations) social and economic opportunities (Belfield & Bailey, 2011).

While many of these concerns and reform initiatives are unique to the U.S. context, others are not. The emphasis on the role of technical colleges in workforce development, questions about the proliferation of bachelor's degree holders, and political interest in improving technical college student outcomes is evident around the world. Next, we provide a brief overview of the development of technical colleges in Chinese higher education and the role they play in current debates about student employability in China.

Chinese Higher Education and Technical Colleges

As with any analyses of national systems of higher education, it is useful (if not essential) to consider the historical origins of a nation's approach to postsecondary education (Clark, 1983). The origins of Chinese higher education can be traced back to the Han dynasty (206 BC–AD 220) when the use of a competitive examination system to determine civil service positions began (Zhao, 2014). The imperial examination system known as the *keju* determined one's position in the labor market: those who ranked highest were appointed to bureaucratic positions. The *keju*, beginning in AD 605, lasted for 1,300 years and contributed to a pedagogical tradition that prioritized memorization, rewarded obedience, and focused on learners' knowledge of Confucian classics and politics. Core principles of Confucian philosophy, particularly the emphasis on cultivating the “superior man” or one who is dignified, firm, and informed, also led to a cultural predilection for the elite, educated classes, and a corresponding disdain for manual laborers working in the skilled trades (Schmidtkte & Chen, 2012).

In the 19th century, Western-influenced language and missionary-led colleges were established, and by 1912 there was one university, 94 professional colleges, and 12 normal colleges in China (Li & Yang, 2014). In 1905 the *keju* system was abolished, and some scholars and reformers began to design secondary and postsecondary industrial schools (Schmidtkte & Chen, 2012). In 1917 the Chinese society of vocational education was established as an organization intended to supplant the dominant, classical educational system focused on preparing aristocracy for bureaucratic positions, and to modernize the nation and prepare a workforce skilled in industrial technologies. These early institutions, influenced by the German model of vocational education, were built to cultivate a skilled workforce to support a developing industrial economy (Schmidtkte & Chen, 2012). However, these early vocational schools were transplanted onto a Confucian educational framework, which forced them to play “second fiddle to character education and social requirements” and so a paucity in workers skilled in modern technologies persisted (Schmidtkte & Chen, 2012, p. 436).

For a brief period, the overarching influence of Confucian ideals in education was challenged with both the implementation of educational and economic models from the Soviet Union in the 1950s and the Cultural Revolution in 1966 (Li & Yang, 2014). Characteristic of this time were ideals that sought to combine formal education with vocational education in order to “produce a cultured, Socialist-minded worker” (Wang & Torrisi-Steele, 2016, p. 149). The long-held Confucian ideals that favored the intelligentsia were ruptured by the revolution that witnessed a tumultuous transition of power favoring of the working classes (Agelasto & Adamson, 1998; Xiong, 2010; Zhao, 2009). As a result, university entrance examinations were halted in favor of admitting those with a proletarian background (Agelasto & Adamson, 1998), and many universities relocated to rural areas, spawning a number of technical and “skilled worker” training schools (Kang, 2004).

In the late 1970s and 1980s, a series of reforms followed, most notably among them China's open-door policy, which centered on rejecting the previous Soviet models and recovering from the Cultural Revolution (Agelasto & Adamson, 1998; Xiong, 2010). In 1978, economic reform

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was on the agenda, with efforts to study Germany's dual education system, with special interest to replicate the German attempt to balance utilitarianism and humanism (Wang & Jiang, 2013).³ During the mid-1980s, specialized institutions were condensed to form larger, more diverse universities that enjoyed increased autonomy (Agelasto & Adamson, 1998). What followed were a series of tens of billions of dollars of investments in higher education, such as *Project 211* and *Project 985*, launched by the central government in the mid-1990s to improve the quality, scientific innovations, and international prestige of top-tier higher education institutions (Michael & Gu, 2016). At the same time, Chinese higher education has undergone efforts to dramatically increase access to and enrollment in higher education, a development considered worldwide as the massification of higher education (Altbach, 1999; Marginson, 2016). As a result, over the past quarter century the number of students in Chinese colleges and universities has increased drastically, from 4% in 1990 to 37.5% in 2014 (Michael & Gu, 2016).

As China's new international and knowledge-oriented economy has produced a substantial demand for an educated workforce, the government is actively addressing the negative perceptions of vocational education (Chan, Goh, & Prest, 2015). For instance, President Xi Jinping in 2014 stressed the importance of vocational education in developing a more skilled labor force, and the *2014-2020 Plan for Establishing a Modern Vocational Education System* articulates a national goal to increase students in these vocational programs to 23.5 million (Chan et al., 2015). Yet in the midst of these reforms, vocational education has continued to suffer from a cultural bias that favors the 4-year degree (Wang, 2013). Furthermore, some observers note that despite massive investments in higher education, the Chinese education system has apparently struggled to produce creative talents and innovations as measured by patents, industrial innovations, and scientific breakthroughs (Zhao, 2009). The former Minister of China's Ministry of Science and Technology recalled the absence of a Nobel Prize in science in China, noting that despite some promising discoveries, China "lacks world-class scientists" (Poo & Wang, 2015).

However, some argue that the problems of Chinese global competitiveness lie deeper than simply the overproduction of bachelor's degrees, or the lack of technical colleges and students trained in the skilled trades. Instead, the purported lack of China's industrial and scientific competitiveness is attributed to the national preoccupation with student success in the *gaokao*, or the infamous college entrance exam. As Zhao (2014) argues, "Chinese schools exist for test prep," (p. 132) and much of the K-12 experience for students is rote memorization, endless competition with peers, and enduring interminable lectures. Indeed, Chan et al. (2015) argue that the *gaokao* is a "soft skills killer" (p. 12), which has deleterious implications for students' prospects in the labor market. The prospect that this focus on standardized tests and didactic lecturing has inhibited national competitive has apparently caught the attention of the central government, as the recent 10-year national plan advocates for teaching to be "heuristic,

³ However, some argue that a humanist educational tradition, not dissimilar from the Western tradition of general education, was present in early Chinese educational philosophy and practice (Cao, 2016).

exploratory, discussion-based, and participatory” (17th National Congress of the Communist Party of China, 2010, p. 25). Along with goals to create a postsecondary system that includes multiple pathways (i.e., both vocational and university-focused), the reform efforts underway in China are not unlike those in the United States.

Another point of commonality between the United States and China is a preoccupation with the idea of a “skills gap,” or the notion that millions of jobs exist and go unfilled due to the paucity of appropriately skilled workers. A recent study found that Chinese employers felt that applicants lacked competencies in areas of leadership, communication, and self-motivation (Chan et al., 2015), and a national survey of college graduates found that students themselves considered their college education to have inadequately provided them with skills such as programming, negotiation, and analytical thinking—all skills essential in the workplace (Molnar et al., 2015). With evidence about college graduates’ skills shortcomings in hand, and persistent anxiety about the nation’s competitiveness in the global marketplace, the skills gap idea deeply influenced how policymakers and postsecondary educators think about the role of a college education in Chinese society (e.g., Qiang & Zhigang, 2016).

Our Approach to Studying College-work Transitions

In this study we draw upon a cultural capital framework to investigate how skills are conceptualized, cultivated, and rewarded within and across the educational and workplace fields in a large eastern Chinese city. A cultural capital perspective provides a counternarrative to the dominant focus on structural “fixes” to challenges facing students’ transitions from college to the workforce, and a lack of attention to the cultural, political, and historical contexts of these phenomena. In doing so, we do not suggest that a focus on structural reforms and college completion are unimportant, but instead that closer attention should be paid to the cultural and pedagogic aspects of students’ skills development and the relationship between higher education and the labor market.

Our approach to studying these phenomena emphasizes the following aspects of the college to work dynamic. First, we view the relations between higher education and the workforce not as a linear supply chain where inputs (i.e., students) are transformed into valued outputs (i.e., skilled workers), but as a cultural transaction where valued forms of capital are acquired in home and school and then rewarded (or not) in the workplace. Thus, multiple venues act together to educate, train, and sort a young person into particular colleges and places of employment (Fligstein & McAdam, 2012; Lareau & Weininger, 2003; Winkle-Wagner, 2010). Second, we view “skills” as diverse and embodied forms of cultural capital that include skills, knowledge, abilities and personal attributes (Bourdieu, 1986). Third, we place particular emphasis on the problem of skill acquisition, whether in the college classroom or corporate training programs. Fourth, because cultural capital can act as a form of “social currency” when students seek employment, we pay close attention to hiring procedures within companies and whether or not considerations of non-technical aptitudes factor into hiring decisions (Rivera, 2012). Finally, each of these phenomena are situated within the specific social, historical, economic and political

context of the time (Spring 2015) and place (a large, rapidly industrializing eastern Chinese city) where the study was conducted.

Methods

The study described in this paper utilized an exploratory qualitative case study design, with a particular focus on the cultural, political, and historical contexts shaping college-to-work transitions (Bartlett & Vavrus, 2017). The primary unit of analysis is a single academic program and an employer in the same field (i.e., biotechnology and advanced manufacturing), or what we call “localized occupational pathways.” This term is intended to denote closely related (based on discipline and coordination) educational and industrial organizations that represent potential career pathways for college students. Documenting how students, educators and employers approach non-cognitive skills development in occupation- and geographically-specific pathways is the central focus of the larger research program in which this study is situated. The study is exploratory as it was intended to identify key issues related to student employability in Chinese technical colleges for later studies with a broader sample.

For this paper, we collected a variety of data to produce an in-depth account of how a group of students, educators, and employers viewed cultural capital functioning within and across educational and industrial fields (Yin, 2013). While this study was not designed as a comparative analysis of Chinese and U.S. contexts, we do analyze the results in the broader context of U.S. and international debates about skills gaps and technical college administration. This foci was informed by the view that “[c]ross-national comparison is particularly advantageous in uncovering the unique features and unconscious assumptions that possess our vision when we study only a single country, generally our own.” (Clark, 1983, p. 2). Thus, a comparative lens oriented our thinking about the design and implementation of this study (Bartlett & Vavrus, 2017).

Study Locations

The educational institution. The vocational college featured in this study—ECTC—was selected for two reasons. First, it is located in a large, rapidly growing city with a population of approximately 9 million, which is not dissimilar to other metropolitan areas studied in our larger research program. Second, an administrator from ECTC visited the home institution of the first author and invited him to visit the college.

Set against a rocky mountain range in an area that until recently was predominantly farmland, the campus is now blocks away from high-rise apartments, skyscrapers with dazzling light shows, and a new subway system under construction. ECTC was founded in the early 1950s and had approximately 700 fulltime and 80 part-time instructors, and 9,200 fulltime and 2,400 part-time students at the time of data collection. The college also had 31 academic programs and over 230 partnerships with local and regional businesses. The motto of the school emphasizes both “morals” and “skills,” which illustrates the dual emphasis on practical, real-world skills and the value of a moral education. The focus of the study was on biology (and biotechnology-related

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companies) and advanced manufacturing, based on their current and projected importance in industrialized economies, and because these two fields were the focus of previous research by the authors (Hora et al., 2016).

The two companies. The two companies included in this study were selected by administrators at ECTC based on their regular recruitment of students from the college. The first company was PharmaCo, which manufactures and distributes drugs and supplements based on traditional Chinese medicine. PharmaCo was founded in the early 1950s and was then acquired by a large national pharmaceutical company that employs over 40,000 people nationwide. The second company was ElectroCo (a pseudonym), which is a joint Chinese-European venture that manufactures components for electrical generation facilities. ElectroCo is rapidly expanding into international sales (e.g., Africa, Europe) and has over 2,000 employees in a huge industrial site outside of the city.

Sampling

The identification of study participants was overseen by the international relations office at ECTC, which made the sampling approach a non-random, purposive procedure. This was not ideal given the potential for bias to enter into participant selection, but it was necessary given language barriers and a lack of access to local educators and employers. A total of eight educators, which included two administrators and six faculty who were actively teaching courses, were selected for inclusion in the study. Besides conducting interviews with all eight participants, classroom observations with three instructors were conducted. In addition, five teachers of English were selected to accompany the first author and provide translation services during the visit. To recruit employers, ECTC contacted local businesses that had recruited from the college in the past. Two of these companies (PharmaCo and ElectroCo) agreed to participate and arranged an interview with a senior human resources manager and factory tours. Thus, a total of eight educators and two employers were included in this exploratory study ($n=10$).

Data Collection

The data collected for this study included structured interviews, classroom observations, and factory tour notes. Interview protocols were translated in the United States by a native speaker of Mandarin Chinese. While local translators were available, given restrictions associated with human subjects protocols at the authors' home institution, these translators were unable to be present during the actual interviews. Instead, they spoke with all respondents prior to the interview and went over the protocol, ensuring that all questions were clearly understood. Then, translators left the room and respondents answered the interview questions in the presence of the first author. For classroom observations and factory tours, translators provided a running commentary on class activities and tour highlights.

The interview protocol included 10 questions that touched upon topics including skills considered essential for workplace success, instructional goals and methods used in academic programs and workplace training, hiring procedures, existing education-employer partnerships,

and views on educational reform in China. The interviews lasted approximately 30 minutes and were digitally recorded and then transcribed in the United States by a native speaker. For the classroom observations, a variation of a structured protocol (the Teaching Dimensions Observation Protocol) was utilized that entails documenting teacher and student behaviors in 2-minute intervals (Hora, 2016; Hora & Ferrare, 2014), along with extensive notes regarding classroom activities. For factory tours notes were taken at the time of the tour, and at the end of each of the 5 days of fieldwork, detailed field notes were written that included analyst impressions, and information from documents provided on site.

Data Analysis

To analyze the interview, observation, and field note data we used an analytic approach that involved an inductive, systematic, step-wise process of deriving themes and patterns from the data (Miles, Huberman & Saldana, 2013; Creswell, 2014). The first step of the analysis involved an open-coding process undertaken by the two authors independently, where in-vivo codes were created based on recurrent ideas, terms or events evident in the data (Ryan & Bernard, 2003). The preliminary codes, which included “active learning,” “valued skills,” and “role of general education” were deliberately kept as close to the raw data as possible without too much interpretation or moving up analytic levels (Berg, 2009). As new instances of a code were encountered, the original code and its definition was revisited and altered or redefined if necessary (i.e., the constant comparative method). After independently creating a code list, the two analysts met and compared notes, discussing the codes and collectively refining the code list, whereupon the first author applied the code list to the entire dataset.

Next, the open codes were analyzed as part of an axial coding process, where relationships and patterns between and among codes were explored. This procedure involved a close examination of the codes and the raw text to which they were linked, and consideration of higher-level or more abstracted categories, as well as relationships such as typologies, cause-effect, and temporal relations. After identifying new categories, the presence of a temporal structure in the data, and the importance of context, a new model was derived that graphically described the results (Miles et al., 2013). At this late stage of analysis, the conceptual framework guiding the study (i.e., cultural capital) was used to refine the findings.

Limitations

Several limitations to the study reported in this paper should be considered when interpreting study results. First, the use of different translators during protocol translation, the interviews themselves, and transcription introduced the likelihood of translation error. Second, the sampling and recruitment procedures were controlled by the host institution (ECTC), which results not only in a non-random sample but also the prospect that respondents were selected in order to present institutionally desirable perspectives. Third, while the small sample size was intentional, given the goal of documenting cultural phenomenon in specific instances (Bartlett & Vavrus, 2017), the results should not be used to draw conclusions for larger populations of technical colleges, faculty, or businesses in a single eastern Chinese city or elsewhere in the country.

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Finally, given the rapid rate of change in the Chinese economy and postsecondary sector, it is possible that the results reported here will no longer be pertinent or salient in a short amount of time.

Results

Analyses of the data resulted in four primary categories that best captured the role played by cultural capital (i.e., skills, knowledge and abilities valued within particular fields) in the transition from college to work experienced by Chinese technical college students. These categories represent a temporal sequence of how specific forms of cultural capital are: (a) conceptualized and valued, (b) cultivated in formal educational settings, (c) utilized in workplace hiring and training procedures, and (d) situated in specific cultural, economic, and historical contexts. In this section, we report findings for each of these categories, with the primary results depicted in Table 2.

Table 2. Four Key Categories and Recurrent Themes Derived from Data

Valued forms of cultural capital	Curriculum & Instruction	Hiring & workplace training	Contextual factors
Cognitive <i>and</i> non-cognitive competencies	Tension between theory and practice	Importance of corporate culture	Cultural norms regarding work/class distinctions
Work ethic	Value of general education	Procedures for hiring	Status of the labor market
Shared responsibility for skills cultivation	Chalk and cramming (i.e., lecturing)	Workplace training programs	Views on education-workforce alignment
	Student-centered teaching methods		State efforts at educational reform
	Varied teaching methods in classroom		

I. Forms of Cultural Capital Considered Valuable for Workplace Success

When asked about the types of skills, knowledge, and abilities that college students need to be successful in the workplace, respondents concurred on the necessity for young people to acquire a diverse range of both cognitive and non-cognitive competencies. Additionally, the importance of a strong work ethic and the responsibility of various parties to cultivate students' skills throughout their lives and careers were also reported.

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The need for both cognitive and non-cognitive competencies. When asked about competencies essential for success in the workplace, respondents spoke about the need for students to acquire a diverse range of skills, knowledge, and abilities. First, respondents discussed the importance of cognitive competencies that include both declarative and procedural knowledge related to a specific field (e.g., advanced manufacturing and biological sciences). Declarative knowledge pertains to the understanding “about” a topic such as DNA replication or if-then programming rules, while procedural knowledge refers to knowing “how” to apply such knowledge in practice. Respondents in this study spoke about the importance of both forms of knowledge, emphasizing how a solid grounding in one’s discipline is essential.

Second, another aspect of cognitive skills is an individual’s ability to think critically, reason, and problem solve. A representative of ElectroCo emphasized the importance of problem-solving, stating that his company needed people who could identify and diagnose problems in the field that were often ill-defined and emergent.

Third, respondents were unequivocal in stating that proficiency in the technical aspects of these fields alone would not be sufficient, as distinct types of non-cognitive competencies were considered invaluable for student success. For example, educators and employers alike spoke about how interpersonal skills such as communication and teamwork were required to thrive in the workplace, as well as intrapersonal skills like attitude and lifelong learning. Others highlighted the internal capacity to learn as particularly important, given the rapid development in science and technology shaping both disciplines. One educator spoke about the importance of students’ “self-learning” or their “receiving abilities” which referred to their proficiency in learning new things and “receiving new knowledge” both in college and throughout their careers. These results are consistent with prior research in China (Molnar et al., 2015) and the United States (Pellegrino & Hilton, 2012) indicating the importance of diverse competencies—and not solely technical acumen in a given field—for student success in the workplace.

Work ethic. Next, we highlight an intrapersonal competency frequently cited in U.S. research on employers’ skill needs—work ethic—which is commonly discussed in terms of a willingness to work long, hard hours and motivation (Hora et al., 2016). But our findings from an eastern Chinese context indicate that respondents did not think about work ethic solely in terms of hard work, but also two additional dimensions: a moral code and commitment to a profession. For instance, one employer spoke about work ethic as the need for students to develop a “moral constraint” that guides behavior in society and the workplace. Educators then spoke about work ethic as a belief system that kept people from “not going against traditional values” and also as a mentality that enabled people to “stay balanced and just” in terms of one’s approach to work. In these cases, work ethic is a set of values that provides individuals with a behavioral code that follows “traditional” Chinese values and moral dictates.

Respondents also discussed work ethic in terms of commitment to a job or profession. For one educator, work ethic meant “a professional attitude to the enterprise and the profession,” which was similar to other sentiments regarding excelling in one’s job and “complying with

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professional standards.” According to this view, work ethic entails adhering to the expectations and norms of a profession, which one educator noted will “determine the direction and future development of a student in an industry.” In considering work ethic in terms of a moral code and commitment to a profession, respondents in this study discussed work ethic in different terms than much of the existing research literature (e.g., Miller, Woehr, & Hudspeth, 2002).

Multiple parties share responsibility for skills development. Regarding the issue of who is responsible for cultivating students’ competencies, respondents stated that family, K–12 and higher education, employers, society at large, and students themselves all play a role. Thus, respondents did not identify a single person or institution as solely responsible. As one educator said, all bear responsibility, but “each has a different mission.”

For instance, several respondents felt that parents played a key role in skills development, especially during early childhood, which is consistent with theorists of cultural capital who emphasize the importance of “domestic transmission” (Bourdieu, 1986) and researchers who argue non-cognitive skills should be cultivated via early childhood education (Heckman, 2000). One educator also stated that parents should teach children “social competence and integrity,” while an employer felt that family “shapes personality” and inculcates traditional values. Some educators also felt that the family was primarily responsible for teaching interpersonal competencies, such as communication and teamwork, via rules for play and acceptable behavior.

Some respondents indicated that formal education (i.e., K–12 and higher education) is required to further develop students’ skills, especially teaching “professional skills” unique to a discipline or profession at the postsecondary level. The employer representative at PharmaCo said that education was “irreplaceable” for student success throughout life. Finally, the business community (via corporate training) and society itself were also described as an important venue for skills development. For example, one respondent considered “society” responsible for developing students’ skills, where young people form ideas from their peers and the broader culture (especially popular culture). One educator even argued that “the key really is society, which guides and influences students” as they mature.

II. Curriculum, Instruction, and Students’ Acquisition of Cultural Capital

The second set of findings pertains to the educational processes that provide students with valuable forms of cultural capital, especially via formal curriculum and instruction.

Tension between theory and practice. Several respondents reported a view that theoretical knowledge alone was insufficient for the world of work. This perspective was often discussed in the context of broader critiques of 4-year colleges. Both employers described graduates of 4-year colleges as having a limited ability to “work with their hands,” an absence of practical skills, and too much theoretical knowledge. In describing the misalignment of 4-year graduates with the workplace, the PharmaCo representative noted that they have “unrealistic expectations” in regards to pay, advancement, and the nature of the work itself. The ElectroCo respondent referred to a Chinese saying to describe university graduates, as being “eyes high, hands low,” or

having expectations that are not aligned with reality. As a result, ElectroCo was beginning to look at ECTC graduates as candidates for not only production jobs but also management positions, which had previously been restricted to employees with 4-year degrees. Notably, this tension between theoretical and practical knowledge is not new in debates about education (e.g., Dewey, 1938; Resnick, 1987), and the issue is becoming increasingly salient in Chinese higher education (Wang, 2013).

Role (value) of general education. At ECTC, the curriculum includes a combination of foundational, technical courses in a discipline and required electives in fields such as English, and the arts and humanities. The rationale for a general education (*tongshi jiaoyu*) curriculum was explained by an upper-level administrator as essential for “personal development” and students’ long-term productivity in the labor market and society, and is part of a renewed national emphasis on multidisciplinary education (Cao, 2016). An instructor argued that exposure to courses in the arts and humanities was particularly important for improving the “social capacity” of students via the cultivation of their understanding of traditional Chinese culture, history, and human behavior. Exposure to these subjects, one respondent claimed, would also provide students with the “right attitude” for life and also a perspective of culture and society that would provide them with a “human quality” necessary for success in society and the workplace.

At the heart of this argument was the view that one of the purposes of education was to prepare students for a life of commitment to advancing societal interests, which is a view that can be traced back to Confucian views of the purpose of education (Bell, 2013; Schmidtke & Chen, 2013). One instructor even argued that “vocational education should firstly be an education” in a variety of disciplines and as preparation for life, and secondarily as preparation for a specific job. However, another instructor raised questions about the need for students in a technical college to take courses in the arts and humanities. This educator felt that many of these courses were not relevant to students’ majors and could be reduced in the curriculum, even though they helped students “self-cultivate” their character and skills. Thus, while several respondents argued for a general education and a focus on the social and public benefits of education, this view was not embraced by the entire study sample.

Teaching methods. Respondents also spoke about teaching methods used in the classroom, which is one of the primary venues where students acquire particular forms of cultural capital. Study participants referred to traditional Chinese modes of instruction (i.e., lecturing) and discussed efforts to introduce active learning methods. Classroom observations of three instructors also contribute insights into the ways some ECTC educators approach teaching and learning.

The prevalence of “chalk and cramming” in Chinese education. Several respondents spoke about the prevalence—throughout all levels of the Chinese educational system—of didactic lecturing. One educator described typical Chinese pedagogy simply as “chalk and cramming.” This teaching approach involves the teacher speaking *at* students for an entire class period,

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where one respondent observed that the “students passively accept the teaching content.” One instructor saw this teaching style, beginning in elementary school, as preparing students to be passive actors in the classroom, so that in college “they don’t want to actively participate” in the class.

The origins of this pedagogical approach have been linked to historic civil service exams such as the *keju* that required applicants to recite Confucian texts from memory (Zhao, 2009). In contemporary times, the *gaokao* college entrance exams were seen as contributing to pedagogical approaches (i.e., lecturing) that emphasized memorization and recitation. Some respondents noted that the pressure for students to succeed in these examinations (and for teachers to have successful students) is such that school essentially becomes an exercise in test preparation, where lecturing is regarded as the most efficient mode of instruction. The long-term effect of being exposed to this type of teaching, some respondents claimed, results in college students expecting “chalk and cramming” and being uncomfortable with anything departing from this norm.

Student-centered teaching methods linked to non-technical skills cultivation. Not all educators in our study felt that lecturing was an effective mode of instruction, and several described using “student-centered” techniques in their classrooms. The use of these techniques were discussed less in terms of improvements to student achievement as measured by grades or achievement tests, as is common in research on active learning in the United States (e.g., Freeman et al., 2014), but more as a way to cultivate non-cognitive competencies. One instructor stated that she regularly utilized “group cooperation and teamwork” to develop communication and collaborative skills in her students. Another educator used “project or task-oriented methods” to emphasize how workplace tasks were often ill-structured and required cooperation with others, by “letting students divide research and material gathering work among themselves while performing a task,” resembling methods such as problem-based learning (Hmelo-Silver, 2004). Another used discussion groups centered on real-life problems, where “students work as a team and exercise friendly communication and related skills, all in a manufacturing context.”

In one department, the embrace of student-centered teaching was part of a department-wide reform effort. A respondent who had overseen this effort reported that 6 years earlier the dominant mode of teaching had been lecturing with a focus on theoretical knowledge, but criticisms from local businesses regarding the practical abilities of graduates led ECTC leadership to revamp how courses were taught. New equipment was purchased for in-class activities, and instructors were trained to integrate the machinery into their lessons with a focus on “operations” and “practical skills.” The respondent stated that the change was sometimes challenging due to instructor inexperience, but that strong and consistent leadership ultimately led to most courses now being taught in a student-centered manner.

Results from observations of three classrooms. Next, we report data from observations of three classrooms: a biology course, an engineering course on computer numerical control (CNC) programming, and an engineering course on programmable logic controllers (PLC). Results from

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the Teaching Dimensions Observations Protocol indicate substantial variation among teaching methods, teacher-student interactions, cognitive engagement, and use of instructional technology across the three courses (see Table 3).

Table 3. Teaching Dimensions Observation Protocol Data

	Biology	CNC	PLC
Teaching methods			
Lecturing	.18	.07	.05
Lecturing w/ PowerPoint	.50	.09	.18
Socratic lecturing	.00	.00	.00
Administration	.02	.00	.00
Small group work	.00	.41	.27
Desk work	.07	.00	.00
Teacher-student interactions			
Teacher question	.27	.11	.07
Student response	.27	.11	.07
Student question	.00	.00	.00
Cognitive engagement			
Problem-solving	.00	.41	.27
Creating	.00	.00	.00
Making connections to real-world	.00	.00	.00
Instructional technology			
Chalkboard	.07	.09	.11
PowerPoint/projector	.32	.09	.11
Clicker response systems	.00	.00	.00
Demonstration equipment	.00	.00	.05

Note: Figures indicate the proportion of 2-minute intervals in which a particular behavior was observed throughout the entire lesson.

The observed biology course took place in a small classroom with several rows of desks facing a chalkboard. On the day of the observation, 41 students sat in the warm, light-filled room for a lesson that was dominated by lecturing with PowerPoint slides (50% of the observed 2-minute intervals) and intermittent instructor questions and student responses (27%). The lesson was highly structured and followed a pattern of instructor lecturing about DNA and the life cycle of micro-organisms and question-and-answer (Q&A) episodes. These Q&A episodes varied between the instructor calling on a student by her/his number, whereupon the student would stand and recite an answer, or an open-ended question to the entire class that was answered by the entire group.

The CNC course was held in a small computer lab, with seven rows of computers lined up in a dark room adjoining a large space filled with large drilling and cutting machines. The instructor began the class with a brief lecture (with no visuals) about the simulation the students would

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work on that day, explaining order of operations and quirks about the software. Then, the students spent the remainder of the class period in groups of two or three, working on the simulation which required them to write, de-bug, and then run code (41%), while the instructor walked from group to group answering questions. During the class a student became curious about the observation, and stated that he preferred hands-on, group based activities to lecturing because it provided opportunities to immediately apply key points from the lecture. The class concluded with another brief lecture by the instructor, where she summarized the major problems encountered by students during the class and engaged in a Q&A session about the assignment.

The PLC class was held in a long, narrow classroom with several Y-shaped tables, each of which had three computer terminals and a large flat space for writing or working. Students sat in groups of two to four at each of these terminals, and proceeded to listen to an introductory lecture (with no visuals) about the task for the day—to write a program that would move a mechanical arm. After the brief lecture and demonstration of the machinery, students spent the class working in groups (27%) while the instructor walked around and provided assistance. The instructor interrupted the group work once for a mini-lecture regarding a common problem the students were encountering, and after another period of group work the class concluded with a brief lecture about the correct solution and mistakes made by the students.

III. Business Practices: Hiring and Training

We now turn to findings regarding the next field into which graduates of ECTC enter—the labor market and specific places of employment such as PharmaCo and ElectroCo. The data reported here illustrate two ways in which cultural capital functions at this important juncture: the significance of corporate culture to employers and its impact on hiring and training policies.

Corporate culture. The idea of companies and other complex organizations having distinct cultures is well established, with scholars often focusing on how beliefs, values and practices are shared among specific administrative units or entire organizations (Van Maanen & Barley, 1985). Respondents in this study spoke extensively of corporate culture and its importance in how they approached hiring, training, and other company operations.

In the recruiting presentation observed at ECTC, the PharmaCo representative emphasized the importance of corporate culture to the students, stating that: “Getting to know a company is like getting to know a person – as time goes on, you get to know the culture better. If a student doesn’t agree with or adapt to the culture, then they won’t last.” Descriptions of the culture at PharmaCo included references to values such as “embrace of entrepreneurial spirit” and “dedication, teamwork, and innovation,” as well as an espoused commitment to upholding the reputation and spirit of traditional Chinese medicine. The culture at PharmaCo was also described in terms of specific workplace expectations such as showing up on time and being continually willing to learn new things, and also the accrued practices and norms developed over “10–20 years of employee and management’s efforts.” Thus, culture in this company is conceptualized as a combination of the corporate story, managerial values and aspirations, and workplace norms developed over time.

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At ElectroCo, the corporate culture was described in less detail, with references to it being “people-oriented” and how the company pays close, even “meticulous” attention to cultivating and maintaining its culture. This issue of cultural maintenance was discussed in terms of a “corporate culture agreement” for employees, such that continued employment was contingent upon strong performance, a good work ethic, and an enthusiastic “buying into the culture.” Thus, for these two companies culture was not an abstract idea but captured essential elements of their corporation’s identity (and slogans) as well as expectations for how staff should conduct themselves and approach their jobs. Further, as we see below, conceptions of corporate culture also play an important role in determining who gets hired and how they are trained.

Processes for hiring and screening. The respondent at ElectroCo spoke extensively about how considerations of culture impact employee hiring and screening. She stated unambiguously that “corporate culture and core values form the most important segment when we recruit new workers.” The recruitment process begins with the human resources department screening applicants via in-person interviews to assess if they “match the culture requirement.” This assessment includes interviews where the focus is not only on work experience or educational credentials, but looking closely at an “applicant’s reaction, his expression, and his overall quality” to make a judgment about his personality in general, and especially any indications about his willingness to learn. These qualities are specifically elicited by asking about interests “outside of work to see how broad his knowledge base is,” including hobbies such as music and movies. In fact, in the interviews deliberately “broaden the topic to see how he learns through and around films.” This focus on non-cognitive skills, hobbies and personality traits is not dissimilar from the PharmaCo recruiter’s message to ECTC students that opened this paper, as interpersonal skills and personality traits are of considerable import to these two Chinese employers. Thus, the notion of hiring as a process of cultural matching found in U.S. contexts (Rivera, 2012) appears to also be evident in Chinese companies.

However, technical acumen is also required to obtain a job at ElectroCo and to obtain promotions, and the development of competency screening tools was described as a priority of the company. These modular assessments would focus on industry- and occupation-specific knowledge to ascertain whether applicants had the requisite technical skills to work at the company, and also to determine if the candidate (or employee) had future leadership or management potential. That said, even if an applicant demonstrated superior technical mastery of electrical engineering or manufacturing technologies, if she/he failed the in-person culture screening test she/he would not be hired.

Training. As with classroom teaching, workplace training is another venue where cultural capital can be cultivated in individuals. At ElectroCo all new hires undergo an extensive 6-month training program that includes department-specific training in both technical aspects of the job as well as training on desirable non-technical skills. The latter training is the priority early in a new hire’s time at the company and focuses on basic etiquette, communication norms, and company culture, whereas later training centers on industry-specific techniques, knowledge and procedures. At PharmaCo the training program is similar, where an extensive “Rainbow Training

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Plan” covers the first 2–3 years of employment. This training first involves a focus on “corporate culture cultivation” where all employees learn how to “build professionalism” and about expectations regarding work ethic and communication on the job, followed by occupation- and department-specific training on professional skills and technical matters. Thus, at both companies there is a focus on reproducing and/or developing two distinct forms of cultural capital in new hires via workplace training: aspects of the corporate culture (e.g., norms for communication, work, and commitment) and the development of task- and job-specific skills.

IV. Salient Contextual Aspects of the Educational and Employment Fields

Finally, we report several contextual factors related to the fields of higher education and the labor market that respondents identified as salient to students’ career pathways. This focus on context is important because how people conceptualize, cultivate and reward different forms of cultural capital depend largely on the contexts or fields in which they are positioned (Bourdieu, 1986; Fligstein & McAdam, 2012). Considering the results reported above in these broader contexts provides a more comprehensive and accurate understanding of skills-related issues facing technical colleges.

Cultural Norms Regarding Work and Types of Postsecondary Education

Several respondents discussed what they perceived as a societal bias against both blue-collar work and technical colleges as inferior to white-collar jobs and 4-year universities. One educator stated that, “Chinese neglect of vocational education is a rather obvious and serious problem,” and an employer argued that in Chinese society there was a lack of recognition that skilled labor is required “to make things run.” Some respondents felt that a consequence of these norms was that too many people pursued bachelor’s degrees and yet couldn’t find work, while many jobs in the trades went unfilled—essentially, the contested skills gap argument.

What is less debatable is the notion that cultural norms in China favor a 4-year university over a technical college education, and white-collar jobs over those requiring manual labor. These sentiments trace back to Confucian views about the need for an education in the classics to become a “superior man” and a historic class structure that clearly delineates between the peasantry and the elite (Xiong, 2010; Zhao, 2014). For respondents in this study, these norms are strongly held and hard to change. As one educator put it, “Chinese ideology is that people aren’t optimistic [or positive] about vocational education” and ultimately would prefer their children to attend a 4-year university. These comments represent views about class distinctions and the forms of cultural capital (both embodied and institutionalized) obtained in educational institutions that provide one entry into high- and low-status occupations.

Structure of the Labor Market and Students’ Opportunities

The next contextual factor cited by respondents was the structure of the Chinese labor market, which was generally viewed as promising for technical college graduates despite a recent economic downturn. Respondents in both ECTC and the two companies felt that a shortage of skilled workers did in fact exist, with companies struggling to fill openings in positions that did

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not require a bachelor's degree. However, the causes for these shortages were varied and did not focus exclusively on a failed postsecondary system. Instead, the aforementioned societal preference for white-collar work, low wages offered by many companies, the rapid growth of many industries, and issues with work-life balance were cited by respondents as probable causes of shortages of skilled workers.

In particular, some respondents felt that attrition problems were a significant issue, as young workers would become unhappy with the low pay and “form ideas of their own and switch jobs.” For companies that were growing rapidly, especially in the local manufacturing sector, such turnover was problematic given the need for a consistent labor supply. To remedy this situation, employees at ElectroCo were offered regular opportunities for advancement and raises, and bonuses were even offered to the families of employees that stayed at the company for long periods.

Nature and Purpose of Higher Education and Labor Market Partnerships

Several respondents discussed collaborative efforts between ECTC and local businesses as a positive and even essential aspect of how the college interacted with the labor market. For some, a close relationship was mutually beneficial because the college produced employees for companies while “they in turn advise our curriculum.” The advising role played by employers was in some cases explicit, such as a manufacturing program that was collaboratively funded and designed by ECTC and a local company, and in other cases involved more informal feedback on the strengths and weaknesses of graduates. The general view among study respondents, however, was that “education should be structured for employment” and that the college needed to ensure that its programming was up-to-date and provided students with valuable skills and knowledge.

Respondents also observed that many instructors did not have extensive and/or current knowledge and experience about industry developments and business practices (see Johnston et al., 2016). In response, ECTC had begun to mandate that all instructors visit a local employer so that they could “understand what’s going on” and enhance communication between the two fields. However, educators described these visits with some degree of frustration, as the translation of industry practices into curriculum and instruction was neither simple nor unproblematic. Employers also found that working with educators and communicating across institutional boundaries was often challenging, and the respondent from PharmaCo stated that what was necessary was a “hand pushing in the middle” such as a third-party group or governmental program that would coordinate relations and facilitate communications between the two sectors.

Institutional and State Attempts at Educational Reform

Finally, efforts at educational reform at the institutional and national levels were discussed as an important factor shaping the role and function of technical colleges in Chinese society. At the time of data collection (Spring 2015) there were three major reform efforts at the national level discussed by respondents. First, the government had recently announced the goal to transform

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over 600 comprehensive universities into “applied science” institutions, which would resemble in mission and curricular offerings a technical college such as ECTC (Chan et al., 2015). Second, as previously noted, the Chinese government has proposed transforming the lecture- or teacher-centered tradition of instruction to one more student-centered. Specifically, the aim was to advocate for teaching to be “heuristic, exploratory, discussion-based, and participatory” (17th National Congress of the Communist Party of China, 2010, p. 25). Third, the government had long advocated for both Chinese educators and companies to become more innovative and creative, which was a response to the paucity of patents and scientific discoveries in China compared to the Western world (Zhao, 2009). This desire for more innovative thinkers was one of the primary drivers of pedagogical reform in Chinese higher education (Zhao, 2009).

Yet these initiatives were met with some skepticism by study respondents. Regarding the campaign to develop Chinese innovative capacity, some felt it was a far more complex problem than others realized and that it easily could become “empty words without fruition.” What was required, these respondents argued, was the recognition that a combination of technical, foundational knowledge and creativity was required, and that teaching and training these capabilities took a long time. Further, while instructors at ECTC felt that the shift towards student-centered teaching was in fact underway (and generally accepted), some observed that challenges existed. These challenges included a lack of equipment required to do project-based learning, the resistance of some faculty to “break the tradition” of lecturing, and the perception (by some instructors) that too much pressure was being placed on teachers to address complex problems such as student employability.

The challenges inherent in educational reform were evident in one department’s effort to adopt active learning on a wide scale. While this transformation reportedly took place within 5 years, it took strong leadership to effectively mandate change, which was feasible in an institutional system where shared governance and faculty autonomy were relatively low. Despite the general shift towards student-centered teaching, some felt that issues persisted with teachers’ ability and willingness to implement the new curricula. An administrator observed that such reforms were “a thankless thing” and that it became a situation of teachers feeling that someone had “moved their cheese” (Johnson, 1988). Ultimately, these insights demonstrate that Chinese technical colleges such as ECTC were in the midst of a reformist agenda not unlike their U.S. counterparts, and that some curricular and personnel-related challenges are common across international borders.

Discussion

Aspects of the Chinese postsecondary system in general, and the role of technical colleges within it, are in many ways similar to the United States. A strong societal bias exists toward 4-year colleges and white-collar work, the postsecondary sector is undergoing considerable change, and policymakers are increasingly focused on vocationalism and meeting workforce needs. But several aspects of the college-work dynamics reported in this paper may be uniquely Chinese. In this discussion, we offer insights that a cultural capital framework on these issues from a Chinese context adds to debates about the role of technical colleges in society and the

labor market, and discuss implications for faculty, administrators, and researchers both in the United States and China.

College Student Employability as a Cultural Transaction Among Fields

The dominant policy narrative in the United States and China regarding college student employability is informed by human capital theory. First, the human capital approach posits that the primary focus of education is degree completion, and thus the mechanisms to be targeted by policymakers are structural factors that support the completion agenda. In order to achieve economic success, students need to acquire educational credentials and cognitive skills as evidenced by standardized tests, grades, and years of schooling. Second, the human capital framework conceptualizes the transition from college to work as linear—a matter of students traveling through an academic program directly to a specific occupation—as is evident in commonly used metaphors such as “talent pipeline,” “supply chain” and even “guided pathways” (Jenkins et al., 2017). This view of college-workforce dynamics as a structural phenomenon aimed at providing students with the “correct” credential (e.g., in high-demand occupations) is dominant in both the United States and China, especially in relation to debates about skills gaps and education-labor market alignment (Chan et al., 2015; Cleary et al., 2017).

But critiques of this functionalist view of education’s role in society and the labor market are increasing, from classical critiques of the human capital views’ overlooking of non-monetary factors (Bourdieu, 1986) to contemporary critiques of the skills gap idea as privileging a single voice (i.e., employers). These critiques emphasize how a focus on structural reforms ignore the sociocultural forces and contexts that shape student employability, as well as the tendency to advocate for “one size fits all” approaches to bolstering student success and workforce development (Cleary et al., 2017). The data reported in this paper reinforce the limitations of a structural, human capital approach by documenting how schooling and hiring are as much cultural acts as they are technical or structural matters of supplying adequate numbers of appropriately trained (and credentialed) students to “high-demand” fields.

Indeed, we argue that students’ transition from technical colleges to the labor market is best thought of as a “cultural transaction” between distinct fields, where the skills, knowledge and abilities acquired in domestic and educational settings are “purchased” (or not) by employers, who themselves have strong cultural norms that act as gatekeeping mechanisms during the hiring process. Further, these transactions are embedded in specific disciplinary/professional, institutional, political and historic contexts (see Figure 1).

Figure 1. Transition from Technical College to Workforce



In the context of ECTC, we argue that the implications of a cultural capital framework for educational practice are twofold: first, how should valued ways of thinking and acting be cultivated in the classroom and workplace training? and, second, how might we devise policy solutions that cease focusing on postsecondary education as the sole cause (and venue of changed practice) of the “skills gap” problem to more expansive, collaborative perspectives that include parents, education, employers and society as equal parties responsible for cultivating students’ competencies? Thus, instead of addressing the question of whether a skills gap exists in China, we problematize the very notion and raise questions about the assumptions that underlay to idea of structural and ideational breakdowns between the educational and industrial sectors when it comes to student employability.

In the remainder of this section, we elaborate on some key facets of the cultural transaction that constitutes students’ transition from college to the workplace: the value of diverse competencies (especially work ethic), the primacy of lecturing, hiring as a cultural act, and the unique nature of the Chinese context.

The Importance of Cognitive *and* Non-cognitive Competencies in the Chinese Labor Market

One principal issue facing the field—both in theoretical and practical terms—is determining which competencies students should acquire to facilitate their entry into the labor market. This conversation is often more about occupations considered in demand (e.g., nurse, computer programmer), rather than specific competencies (e.g., diagnostic skills, analytic thinking), which

leads to a focus on cognitive and technical skills related to a particular occupation or field. However, the literature indicates that graduates of Chinese technical colleges feel that certain non-cognitive skills such as quality control analysis, persuasion, negotiation, and communication are highly valued in the workplace but inadequately provided by the postsecondary sector (Molnar et al., 2015), and the data reported in this paper reinforce this contention. For instance, ElectroCo needs problem solvers in their advanced manufacturing company, and PharmaCo needs employees that can communicate well, work in teams, and be committed to the field of biological science and pharmaceuticals. The competencies desired by these employers are not limited, therefore, to facts and disciplinary concepts picked up in a robotics or molecular biology course or technical expertise as exhibited by a high score on the *gaokao*, but instead they reflect ways of reasoning and thinking that are highly valued within a profession.

In addition, within the two Chinese companies featured in this study, an allegiance to the craft or profession was also highly desired, in contrast to Western views of work ethic which center on the ability to work long, hard hours while delaying instant gratification (Miller et al., 2002). Given the importance of the construct for student success in the workplace, future research on this topic should build upon comparative analyses of work ethic in East Asian countries (Woehr, Arciniega, & Lim, 2007) to scrutinize aspects of work ethic beliefs in China that may implicate culturally specific views on the role of kinship and professional ties, loyalty to one's family and profession, and Confucian (and political) allegiance to social harmony (e.g., Harrell, 1985).

Ultimately, then, the forms of cultural capital that Chinese technical college students should acquire to ensure their success in the labor market encompass both cognitive and non-cognitive competencies, an argument increasingly advanced by U.S. educators (e.g., Pellegrino & Hilton, 2012) and found in employer-based research in the United States (Hora et al., 2016) and in China (Molnar et al., 2015). These data raise a question that we argue should be at the center of any discussions about college student employability, but sadly, is almost entirely absent from policymakers' and researchers' discussion of these issues: how do we cultivate these diverse competencies in academic programs?

Teaching, Curriculum: Kicking the “Chalk and Cramming” Habit

Chinese colleges, however, face a challenge with respect to how institutions are actually capable of cultivating cognitive and non-cognitive competencies, which is a situation not unlike that which exists in the United States (see Freeman et al., 2014). A particular issue in China is the predominance of the testing and lecturing culture, which arguably is more deeply ingrained—via the impact of the *gaokao*—in Chinese classrooms than in U.S. classrooms (Zhao, 2014). With the *gaokao* and testing culture as strong as ever in China today, data indicate that the average Chinese student spends more than twice the amount of time on homework as the Organisation for Economic Co-operation and Development average (Zhao, 2014). Likewise, study respondents spoke about this method of chalk and cramming and how students are socialized to expect lecturing that is focused on the memorization of facts to the extent that more hands-on, experiential learning was sometimes resisted by students.

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However, we should resist easy caricatures of the classrooms of an entire nation based on a handful of non-scientific accounts of practice, and the data reported in this paper indicate that Chinese technical college students are not subjected exclusively to 50-minute lectures. Structured observations of three classes at ECTC revealed, albeit through a small and self-selected sample, that while lecturing certainly reflected this tradition, it was also moderated by extensive Q&A and small-group work, especially in engineering-related courses. Teachers used modified versions of problem-based learning, where real-world problems were introduced, followed by a mini-lecture to provide context and background information. Students worked in groups to collect information and test their collaborative approaches to addressing issues. What was observed was decidedly not a lecture-heavy approach. Amidst talk of reform, small changes appear to be taking place.

But widespread change in educational practice is notoriously slow, and it will be difficult in a system where teachers have little training and instructional autonomy, and where students—as they have been socialized to do—may resist non-lecture modes of teaching and learning. Further, pedagogical reform is not a simple matter of leaders' dictating new practices. A variety of factors, such as teacher beliefs and training, workload, routinized practices, assessment and accreditation pressures, all shape teachers' decision-making and thus make introducing (or even mandating) a new teaching method not a simple matter (Darling-Hammond & McLaughlin, 1995).

This has been evident in the slow adoption of active learning in STEM departments in U.S. higher education (Bradforth et al., 2015), with departmental and disciplinary cultural norms about the nature of knowledge, and student learning contributing to the lecture remaining a dominant mode of instruction (Hora, 2016). In considering the nature and status of instructional reform in Chinese higher education, future research should examine how Chinese faculty members' beliefs about student learning, workplace routines, and organizational structures impact decisions about curriculum and instruction.

Hiring and Cultural Fit in a Chinese Company

In many discussions of college-work transitions and skills gaps, the issue of hiring is rarely broached, with the phenomenon of college students' actually getting a job unproblematic beyond acquiring the "right" credential (e.g., Sullivan, 2012; Qiang & Zhigang, 2016). While considerable research exists on personnel management and occupational mobility in China (e.g., Walder, Li, & Treiman, 2000), much less exists on how employers make hiring decisions, which is a state of affairs not unlike that which exists in the United States (Bills, 2003; Rivera, 2012). This aspect of college-workforce dynamics is too important to ignore, as both our data and that of others (Rivera, 2012; Hora et al., 2016) reveal the cultural and subjective underpinnings of the hiring process.

As a result, precisely what employers seek during hiring and screening, and how they select from multiple applicants, remains an open empirical question, and one that U.S. researchers are beginning to explore (Rivera, 2012; Rivera & Tilscik, 2016). While prior work suggests that

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technical skills and proven work experience are a primary criterion for personnel selection in China (Huo, Huang, & Napier, 2002), our data show a different picture. The predominance of ensuring that applicants fit the corporate culture, and also how on-the-job training includes a considerable focus on assimilating into the workplace culture, has significant implications for student employability as well as the types of programs and services institutions like ECTC offer to their students.

The evidence is clear that the ability of a student to obtain a job is not simply a matter of their having a degree or superior cognitive skills. Instead, issues such as their personality, communication skills, and “fit” with the company where they seek employment, also influence employers’ hiring decisions. Of course, other factors also impact students’ job prospects, including social networks (*guanxi*) and governmental appointments (Walder et al., 2000), but assessment of the fit between an individual and the company certainly impacts his/her occupational status. While ensuring fit is a reasonable and rational approach, given its links to increased retention and productivity (Kristof, 1996), hiring as cultural matching introduces a subjective and potentially discriminatory element into the hiring process. Evidence from U.S. contexts indicates that hiring discrimination on the basis of social class (Rivera & Tilcsik, 2016) and race (Kang, DeCelles, Tilcsik, & Jun, 2016) persists, and the role of implicit bias cannot be discounted in assessing “fit.” This is especially problematic in China in regards to the numerous ethnic minority groups that constitute the nation’s population (Hasmath & Ho, 2015).

What does this mean for colleges like ECTC? First, we suggest that an increased focus on non-cognitive skills in the curriculum and instruction of Chinese higher education is warranted. This is not solely to ensure students have brighter prospects in the labor market upon graduation, but also to improve their long-term career potential, health outcomes, and service to society—all outcomes that researchers argue makes a focus on non-cognitive skills development an essential goal for educators (Heckman, 2000; Pellegrino & Hilton, 2012). In China, where considerable national angst about the creativity and innovation of its scientific and business community exists, a focus on cultivating both reasoning skills like problem solving and non-cognitive skills like teamwork and communication is particularly important. In addition, given the prospect that general and interdisciplinary education is uniquely well suited to cultivating these diverse competencies (e.g., Cao, 2016), colleges should carefully consider the implications of curricular changes on the types of skills students are developing. Finally, career services should provide students with the opportunity to participate in mock-interviews and analyses of corporate cultures, in preparation for the likelihood that they will soon undergo a process of cultural screening as they apply for jobs upon graduation.

The Broader Context of Chinese Technical Education

The data we report in this paper should be considered in light of the unique context of China in the early 21st century—not as a discussion of college-work pathways or skills gaps as if they unfold in a cultural, economic and political vacuum—but as one occurring in a time of intense cultural and socioeconomic ferment. For instance, ECTC sits in the midst of an urban area that did not exist 20 years ago, in a metropolis that is the home to multinational companies whose

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factories stand where small vegetable farms existed as recently as the 1990s. As China evolves from a centralized, controlled economy to a market-based system and its higher education system continues to undergo considerable investments and change, the role of technical colleges in Chinese society and the labor market continually evolves. Here we consider two contextual factors that need to be included in discussions about the employability of students in Chinese technical colleges.

The first issue is that of inequality, as broad-access technical colleges are widely viewed as playing an important role in social mobility by providing low-income students with the opportunity to obtain a postsecondary credential. This is salient here because China is experiencing rising income inequality, with only one percent of Chinese households owning a third of the nation's wealth (Wildau & Mitchell, 2016). Indeed, the author Yu Hua (2011, p. 158) observed that, "China today is a land of huge disparities." Thus, a central question facing policymakers and technical college educators in China is, "What role do technical colleges play in contributing to social mobility and/or inequality?" This question must be asked because technical colleges are not always beneficial to student prospects, as many graduate with debt and no credentials, thereby worsening their prospects and potentially exacerbating inequality (Schudde & Goldrick-Rab, 2015). Future research should expand upon the considerable body of research on issues of cost and accessibility in U.S. technical colleges to investigate these issues in similar institutions around the world.

Another issue that provides an important backdrop to the data reported in this paper is the long-standing cultural bias in China (notwithstanding policies espoused during the Cultural Revolution) favoring white- over blue-collar work. While some current observers belittle graduates of 4-year colleges as being too "clever" and inadequately prepared for the "real" world (Wang, 2013), many agree that Chinese society still privileges professional, office-related jobs to manual labor in the skilled trades or agriculture, based on a combination of long-standing Confucian distinctions between the classes (Schmidkte & Chen, 2012; Wang & Torrissi-Steele, 2016). We highlight these sentiments because our respondents mentioned them as factors that may shape student decisions about their careers, which raises questions about the role that cultural norms and societal expectations play in young people's career decision-making. Furthermore, given the possibility that China is experiencing a glut of bachelor's trained students in an economy that is no longer creating high-skill and high-wage jobs at a rapid rate (Hancock, 2017), it is not unlikely that the Chinese version of the "College for All" movement is increasingly at odds with the realities of the labor market. These issues raise questions about the relationship between industrial and postsecondary policy, and the prospect that students' career trajectories are shaped by a combination of rational considerations of the labor market as well as deeply held cultural norms about the nature of work.

Conclusions

The human capital perspective on student employability provides an incomplete picture of the nature of student employability, leading to a myopic focus on cognitive skill acquisition and a conception of college-work pathways as a linear, unproblematic matter of acquiring a

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credential valued in the marketplace (Cleary et al., 2017). Instead, the data reported in this paper from an eastern Chinese city confirm and extend prior work that demonstrates the importance of both cognitive and non-cognitive skills (e.g., Heckman, 2000) and how a complex array of sociocultural, economic, and organizational factors influence student transitions from college and the workplace (Bills, 2003; Bourdieu, 1986; Rivera, 2012). Despite a welcome focus on systemic reforms to technical colleges as opposed to singular “magic-bullet” reform initiatives (Bailey et al., 2015), we contend that programs focused on curricular and programmatic pathways overlook the importance of classroom pedagogy in cultivating non-cognitive skills and the role (via hiring and job creation) that employers play in shaping students’ labor market outcomes. While the postsecondary sector in both the United States and China stands to improve on a variety of fronts, such as access, affordability, and relevance, too often colleges and universities are singled out as the primary (if not the sole) causes of national economic distress, with little attention paid to economic development, job quality, and changes in the workplace. This is due in part to privileging employer and labor market needs in conversations about student employability, and we call for a shift in emphasis and voice that also considers the needs of students, educators, and society itself.

In considering the complex issues facing national postsecondary systems and labor markets, we also argue that framing the problem as a competition between nations, a zero-sum game where either the United States or China is the “winner,” is counterproductive. While we do not naively overlook the inherently competitive nature of science and industry in the global marketplace and the desire for both nations to be a global leader in these venues, there exist points of common interest where a spirit of collaboration (at the least among communities of educators) is warranted. Consider the global need for students to not only be competitive in the 21st century labor market, but also critical thinkers and civic-minded individuals who can pursue truth, knowledge and equity for all citizens. Towards this end, educational innovators in both nations seek ways to instill opportunities for active learning throughout the curriculum, and to integrate the liberal arts tradition with training in technical skills. The narrowing of the curriculum via a focus only on jobs and cognitive skills is thus not only inimical for students’ prospects in the labor market but also for societies where civic engagement and critical thinking are sorely needed.

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