Abstract

Using topic mapping techniques, we provide a review of the 3,236 published articles in the five

premier HRD journals published between 1990 and 2019. In doing so, we map the key terms that

evidence the emergence of five major topic clusters within HRD scholarship: (1) HRD as an

entity, (2) HRD interventions, (3) national HRD, (4) career development in organizations, and

(5) HRD and higher education. We provide a synthesis of the clusters, create a taxonomy of topic

areas, and identify the mature, nascent, trending, and growing concepts. In doing so, our paper

provides an overview of where we are in HRD scholarship. We then suggest collaborative,

competitive, and configurational boundary work as strategies that HRD scholars can use

purposefully to influence where we could go next. Our taxonomy provides a framework that

informs both novice and experienced HRD scholars and clarifies where we are for those who

wish to push HRD forward. Finally, our findings can guide interested practitioners in their search

for actionable knowledge in HRD.

Keywords: Topic Mapping, HRD, Taxonomy, Research, Gap, Journal

Mapping Human Resource Development: Visualizing the Past, Bridging the Gaps, and

Moving Towards the Future

"What is HRD?" This question has been a concern among HRD scholars since its

conception (e.g., Callahan, 2007; Gold, 2017; Kuchinke, 2001; M. Lee, 2001, 2014; McLean &

McLean, 2001; Woodall, 2001). As a result, much effort has been taken to establish the

definition, identity, and theoretical groundings of HRD (e.g., Chalofsky, 1992; T. N. Garavan,

McGuire, & Lee, 2015; Hamlin, 2011; Kuchinke, 2000; M. Lee, 2001; Lynham, 2000; McGuire,

2006; Russ-Eft, Watkins, Marsick, Jacobs, & McLean, 2014; Swanson, 2001). Recent comments

have suggested that HRD journals are publishing more non-HRD research on topics that do not

systematically connect to HRD's core identity (Kormanik & Shindell, 2014; M. Lee, 2014), thus

creating disjoined research streams. As a result, authors who have little knowledge of HRD are

submitting their manuscripts and having them accepted for publication, even though they are

hard pressed to connect their research to HRD. Thus, we believe that it is important to determine

HRD's research sub-communities based on published articles. We do not advocate reducing the

variety of approaches or presenting an over-arching theory of HRD. Quite the opposite, we posit

that a taxonomy of HRD discourse, which groups together related foci, will help provide the

grounds for retaining HRD's core, while incorporating concepts, methods, and findings from

external sources into HRD's realm.

Systematic efforts are required to suggest the research traditions that have emerged to

date in our efforts to study HRD. Prior reviews have been undertaken in HRD that have focused

on specific topics (e.g., training transfer; Burk & Hutchins, 2007). Although these reviews have

been useful in advancing research in those specific areas, they have not facilitated a

comprehensive overview of HRD research topic domains. To identify such domains, researchers

have used citation analysis approaches, identified the highly cited articles, determined the

volume of publications by sub-themes in HRD journals, and the mapped the patterns of citations

among HRD scholars (e.g., Y. Cho & Park, 2012; Jo, Jeung, Park, & Yoon, 2009). However,

current reviews are limited in furthering our understanding of broad topic domains, the weight

researchers have given to subjects, and the relationships among areas of study.

The purpose of our review is to provide a holistic view of the topic domains and organize

the accumulated work in a way that will allow us to speak to where HRD has been and where it

yet needs to develop. We employ the topic mapping (Van Eck & Waltman, 2011) as our research

method to provide a review of the 3,236 articles in the five premier HRD journals published

from 1990 to 2019. Topic mapping has allowed us to create visual maps that reveal research

clusters and relationships among them without regard for previous reviews (downloadable map:

https://tinyurl.com/qsoapgt). In doing so, we make several important contributions to HRD. First,

we bring to HRD researchers' awareness the connection of their work with the larger body of

HRD scholarship. Second, our organization of the topic areas within HRD highlights the

conceptual strengths and opportunities for advancement of HRD. Third, we offer strategies for

engaging in boundary work and integrating, re-focusing, and enlarging HRD's major research

topic domains.

Literature

Several past reviews have provided high-quality overviews of HRD research and

publications that can be categorized based on methods as citation analysis (Jeung, Yoon, Park, &

Jo, 2011; Jo et al., 2009; Sleezer & Sleezer, 1998; Sun & Wang, 2013) and content analysis

(Ghosh, Kim, Kim, & Callahan, 2014). Below, we provide an overview of these past efforts and

then describe our topic mapping approach.

Citation Analysis of HRD

Citation analysis encompasses a series of methods that identify patterns in the literature, the knowledge structure of a discipline, and the influence of journals, articles, and authors in a network of relationships (Pieters, Baumgartner, Vermunt, & Bijmolt, 1999). Jo et al. (2009) were the first identified in our review to conduct a citation network analysis among the four major AHRD journals (1990 to 2007). Citation network analysis focuses on the linkages of citations among authors and answers the question, "who is citing whom" (Jo et al., 2009, p. 505). For example, based on the frequency of citations at the time of analysis, Jo et al. (2009) identified a list of ten most frequently cited HRD articles (e.g., Holton, 1996; McLean & McLean, 2001; Rouiller & Goldstein, 1993). Then, based on the chain of citations within the network, they found the main interests in HRD to be learning and performance (e.g., Brooks, 1992; Holton, 2002) and theory building (e.g., Swanson, 2000). The same research team examined the top 20 most cited HRD articles by journals in other social science disciplines through a citation analysis (Jeung et al., 2011). The top 20 HRD research articles were most frequently cited by articles published in education, learning, and performance improvement journals (46.1%), followed by business and management journals (32.9%), psychology journals (6.4%), other social science journals (9.7%), and, despite specifying exclusion of journals other than social sciences, other journals outside of social science disciplines (4.9%).

Adopting another citation analysis method, Sun and Wang (2013) focused on journal impact analysis. They collected data from the publications in the four AHRD journals (2005-2011) and used various measures (e.g., Google Scholar GS, h-index) to calculate accumulated journal impact factor (JIF) for each of the four journals (see G. G. Wang, Gilley, & Sun, 2012 for a review of the method of analysis). They used an open access citation analysis software (i.e.,

Publish or Perish 3) that draws raw citation data from the journals and calculated the

accumulated JIF for each journal. The authors found that the four journals generated 7,794

citations during the seven-year period at the time of their data collection. Their analysis revealed

that, among the journals, the highest JIF belonged to *Human Resource Development Quarterly*

(*HRDQ*), the lowest to *Advances in Developing Human Resources* (*ADHR*), and *Human*

Resource Development Review (*HRDR*) and *Human Resource Development International*

(*HRDI*) fell in between).

Some of the existing HRD citation analysis articles have included only the publications

from a single journal and determined the most influential articles in human performance

technology (Y. Cho, Jo, Park, Kang, & Chen, 2011) and educational technology (Y. Cho, Park,

Jo, & Suh, 2013). More recently, Mehdiabadi, Seo, Huang, and Han (2017) identified disciplines

that have contributed to contemporary HRD research through citation analysis of articles

published in *HRDQ* from 2007 to 2013. Analysis of 5,807 citations showed that psychology

remains a prominent building block for current HRD research, while the presence of other major

disciplines, such as economics and systems theory, were less evident (Swanson, 2001).

Consistent with previous reviews, we conduct a review of the HRD literature using topic

mapping techniques. Topic mapping is an innovative method that originated in computer science

that reveals "phenomenon-based constructs and grounded conceptual relationships in textual

data" (Hannigan et al., 2019, p. 586). The advantage of topic mapping is its capability of creating

visual representations of academic research. The visualizations facilitate shared understandings

of knowledge domains and collaborations across distant or disconnected areas. Topic mapping

has been used by researchers to review academic fields of research, such as human resource

management (Markoulli, Lee, Byington, & Felps, 2017). Our topic mapping review provides

insights into research clusters that have taken shape over time, what these clusters comprise, where they are distinct, and how they relate to one another.

Topic mapping enables us to address the limitations faced by previous citation analyses of HRD. Citation analyses described in the above sections show how HRD research is being cited by the HRD and other research communities. The most important finding of the citation analyses was that HRD could be characterized as a "small-world network" (Jo et al., 2009, p. 530), which means that HRD can be divided into distinctive clusters. However, identifying the content of the clusters is beyond the capacity of citation analyses as it functions based only on the existence of a citation (Jeung et al., 2011). Citation analyses do not provide qualitative information on the relationships among articles; thus, identifying clusters of topics is challenging using citation network analysis; whereas our topic mapping demonstrates what the clusters are and describes the topics of each cluster (Van Eck & Waltman, 2011).

Content Analysis of HRD

Content analysis is a useful in-depth analysis and description of the content of scholarship, which reflects what conceptual and empirical research has been published over the years in a discipline (Furrer, Thomas, & Goussevskaia, 2008). Ghosh et al. (2014) conducted one of the few content analyses of HRD to identify what conceptual and empirical research has been published through its affiliated journals. They identified content in 939 peer-reviewed articles published in HRD's four major journals (2002-2011) and identified ten dominant themes (i.e., learning, training, leadership, NHRD, culture, performance, work attitude, diversity, career, knowledge). The authors showcased how the boundaries of HRD have expanded, and some new research foci (e.g., knowledge) have replaced older themes (e.g., training).

In another content analysis study, Hurt, Lynham, and McLean (2014), coded 16 randomly selected articles published in AHRD-sponsored journals and identified six theory-related (e.g., description of HRD foundations), nine research-related (e.g., context-specific discussions of research results), and nine practice-related (e.g., applicable tools for practice) themes. Similarly, content analysis of the most-cited articles in HRD journals revealed three key research themes: "(a) training transfer and evaluation, (b) learning in organizations, and (c) knowledge sharing and knowledge creation" (Jeung et al., 2011, p. 87).

Previous content analyses of HRD have been limited in the scope and timeframe of publications included in their analysis (e.g., four journals and ten years of publications; Ghosh et al., 2014). Topic mapping enables drawing data from the four-affiliated journals plus a European-based journal without time limitations (Van Eck & Waltman, 2011). It also adds a visual representation, systematically categorizes topics into clusters, and calculates the links among all terms in the database (e.g., demonstrated by lines on a visual map). It then provides measures such as weight (i.e., size and number of terms in a cluster), concentration (i.e., the closeness of terms in the clusters), and relatedness (i.e., closeness and links to other clusters) for further analysis (Van Eck & Waltman, 2011).

Methods

The methods used to carry out our research are described in this section. Specifically, we describe our data collection and data analysis methods.

Data Collection and Sample

We created maps of HRD topics using every article published in five primary HRD journals: the four HRD journals affiliated with the Academy of HRD (AHRD)–*HRDI, HRDR, HRDQ,* and *ADHR*, as well as the *European Journal of Training and Development (EJTD).* These journals stand as the major, but not all-inclusive, scholarly outlets for disseminating HRD

research and represent the core of the knowledge developed in HRD (Sun & Wang, 2013; Jo,

Jeung, Park, Yoon, 2009).

We created the topic maps using VOSviewer software (Van Eck & Waltman, 2011),

which has proven to be a useful tool for analyzing and reviewing scholarly fields. Researchers

have used this approach to organize the evolution of topic areas in human resource management

(HRM) (Markoulli et al., 2017), career studies (C. Lee, Felps, & Baruch, 2014), virtual work

research (Raghuram, Hill, Gibbs, & Maruping, 2019), and work design literature (Parker,

Morgeson, & Johns, 2017).

As the first step, we imported into the software all issues and numbers of the selected

journals since their establishment or inclusion in Scopus (Van Eck & Waltman, 2011) until June

2019. Our population included 839 articles published in *HRDI* (1998-2019), 402 articles

published in *HRDR* (2002-2019), 939 articles published in *HRDQ* (1990-2019), 709 articles

published in *ADHR* (1999-2019), and 347 articles published in *EJTD* (2012-2019). We included

conceptual and empirical (qualitative, quantitative, and mixed methods) articles, editorials, book

reviews, and non-peer-reviewed articles to provide a comprehensive picture of HRD literature.

This inclusion process yielded 3,236 HRD articles; VOSviewer software analyzed co-

occurrence of terms or topics (i.e., words that appeared in pairs or link between any pair of

terms) in the titles, abstracts, and keywords (Van Eck & Waltman, 2011). Before running the

analysis, we standardized 31 terms to combine the number of occurrences of equivalent terms

(e.g., behavior and behaviour; policy maker and policy-maker; United States and US). To help

with a visually organized presentation of terms, we merged abbreviations and their full terms

(e.g., National Human Resource Development and NHRD) and lengthy terms into more

abbreviated forms (e.g., strategic human resource development into strategic HRD). Finally,

generic terms, such as "current study," "previous research," and "participant" were considered

irrelevant to the document's topic or methods, as were terms specific to a structured abstract

format, such as "practical implications" and "findings" were removed from the analysis.

Data Analysis

We applied the VOSviewer's network mapping analysis, which calculates the occurrence

of terms or topics based on a threshold of at least 10. We chose this threshold as it provided a

total of 515 terms and an adequately granular visualization of the intellectual base of HRD. The

all-network visualization shows each term that surpasses the threshold of 10 (Lee et al., 2014;

Markoulli et al., 2017) as a circle, and the size of the circle indicates the frequency of appearance

in the data. The map also indicates the link and distance between circles, reflecting the co-

occurrence of the term and their relationship with one another (see Table 1). The circles and their

links lead to the emergence of topic clusters based on the most closely related term when each

circle is assigned to only one cluster. In our analysis, VOSviewer identified five clusters depicted

with difference colors on the map (see Map 1). To check for the stability of the clusters, we

carried out the same analysis for other thresholds (i.e., 5, 15, 20, and 30) (Raghuram et al., 2019),

and again we found five clusters. We supplemented our analysis with VOSviewer's density and

overlay visualizations, which use color to indicate the concentration (i.e., density of terms) and

age of the topics (see Maps 2 and 3).

Finally, we applied a classification scheme inspired by Markoulli et al. (2017). We used

VOSviewer's clustering algorithm to code the terms into five categories: what-terms (i.e.,

concepts, variables, theories, such as leadership), how-terms (i.e., research design, statistical

techniques, such as questionnaire), who-terms (i.e., individual and collective actors, such as

HRD practitioners), and where terms (i.e., industries, work contexts, and geographic areas, such as Europe) (see Table 2).

Findings

In the methods section, we described how the VOSviewer builds on the statistical analysis of concurrent terms that appear in retrieved articles' titles, abstracts, and keywords and then clusters the related terms. In our analysis, VOSviewer identified five non-overlapping clusters based on articles in the selected HRD journals as displayed in the network visualization (see Map 1). Labeled circles and five colors distinguish the emergent clusters in the network visualization map. The size of the circles demonstrates the weight of an item or its frequency in the data. Labels of some circles are hidden in the two-dimension map to ovoid a display with excessive text and make the map easier to read. The color determines the cluster to which a circle belongs. For example, all of the red circles belong to the same cluster. Finally, the circles are connected with lines of varied distances. The distance determines the co-occurrence or the link between pairs of terms in the data. Table 1 shows the overall weight, concentration, and relatedness of the clusters comparatively.

[Insert Table 1 about here.]

[Insert Map 1 about here.]

VOSviewer provides only the raw clusters, and researchers need to add interpretations to make sense of the data. To interpret and label the clusters that VOSviewer provided, we went through an iterative process of adding, deleting, merging, and renaming the clusters (Merriam, 2009). We followed the practice of "in vivo coding" and assigned words taken from the data (Charmaz, 2006); however, the HRD literature informed our process of naming the clusters (see Table 2). The iterative process was facilitated by the discussion among the authors to reach

consensus. We labeled the five topic clusters as: 1) HRD as an entity, 2) examining HRD interventions, 3) national HRD, 4) career development in organizations, and 5) HRD and higher education. We further borrowed from Markoulli et al.'s (2017) mapping study of HRM, categorizing the content of the clusters to what-terms, who-terms, how-terms, and where-terms that enabled us to describe features of each cluster in more detail (see Table 2).

[Insert Table 2 about here.]

Cluster 1: HRD as an Entity (Red)

    HRD as an entity contained the highest number of terms (184). As shown in Table 1, *HRD as an entity* is a focal cluster with several topic areas, as well as several links to the other clusters. As HRD is evolving, it is natural for HRD to have dedicated substantial effort in defining its boundaries, establishing its identity, and articulating its core components. This cluster reflects decades of continued effort in HRD to identify its theoretical and empirical bases, acknowledged by leading scholars in HRD repeatedly (e.g., T. N. Garavan et al., 2015; M. Lee, 2001; McLean & McLean, 2001; Swanson, 1999). This cluster is composed of the foundations of HRD, its research streams, and its topics (i.e., what-terms), the stakeholders who framed and continue to frame HRD (i.e., who-terms), the methods that have been used for understanding, synthesizing, and expanding HRD (i.e., how-terms), and the sites where HRD has been discussed (i.e., where-terms).

    What-terms. What-terms demonstrate HRD scholars' endeavors in establishing and advancing principles of *HRD as an entity*. Example terms standing as descriptions include "HRD theory building," "identity," "boundary," "definition," "discipline," "field," and "foundation." Other terms indicate HRD's efforts in monitoring its evolution (e.g., "past decade," "present," "future direction"), building its theory (e.g., "philosophy," "paradigm," "understanding,"

"synthesis"), grounding its foundations (e.g., "sociology," "psychology," 'economics," "systems

theory"), and expanding its horizons (e.g., "evolution," "new way," "new perspective," "new

approach," "new model").

Through continuous scholarly dedication, HRD has obtained unique characteristics. It has

evolved into a system of scholarship and practice that involves leading scholarly associations

(the Academy of Human Resource Development (AHRD) with four affiliated peer-reviewed

journals and University Forum for Human Resource Development (UFHRD)) (Ellinger, Elliott,

McDonald, & Storberg-Walker, 2016; Torraco, 2016; Watkins, 2016; Watkins & Marsick,

2016). A number of universities offer HRD degrees around the world and AHRD currently holds

three international annual research conferences in the Americas, Asia, and Europe, with country-

level conferences emerging (McLean & Lee, 2016; Watkins, 2016; Watkins & Marsick, 2016).

M. Lee (2001) noted that HRD is "a process of becoming" (p. 327), which suggests that

HRD will develop into a distinctive entity over time. In 2009, Jo et al. (2009) conducted a

citation network analysis of HRD articles in which they identified the most highly cited articles

were those that advocated theory building. A decade later, the fruits of those theory development

articles have now grown. As shown in Table 1, research streams and topics characterize HRD,

including "organizational learning," "adult learning," "leadership development," "employee

development," "OD (organization development)," "international HRD," "strategic HRD,"

"virtual HRD," "critical HRD," and "emotions."

While some of the research topics represent traditional or core HRD themes (e.g., adult

learning, leadership development, OD, and international HRD), others indicate growth.

Emergent subject areas featured in our analysis are critical HRD, strategic HRD, virtual HRD,

and emotions. For example, the critical HRD area plus a few related terms in Table 1 ("critical

reflection," "critique," "inclusion," and "diversity") focus on HRD's dedication to critical

epistemology (Bierema & Callahan, 2014; Sambrook, 2009). The critical tradition in HRD is

rooted in the belief that human resource developers are in a different position than management

in most organizations—"they often have more immediate formal commitment to worker well-

being, and their interests are not directly tied up with preserving control or current hierarchical

relations" (Fenwick, 2005, p. 202). Similarly, strategic HRD coexisted with related terms, such

as "business strategy," "competitive advantage," "mission," "organizational strategy," and

"vision." Such research focuses on the question of integrating HRD into business strategy and

mission to gain competitive advantage (T. N. Garavan, 2007). Virtual HRD and "technology"

and "new technology" corresponded with HRD's response to organizations' needs to find new

ways of adapting to technological advances (Mancuso, Chlup, & McWhorter, 2010). HRD with

its traditional focus on learning and development utilizes technology tools and computer-

generated environments to improve employee expertise and performance (Bennett, 2009).

Finally, other noteworthy terms recorded in Table 1 are "emotion," "emotional intelligence," and

"feeling." Emotion-related research with HRD can be attributed to scholars' emphasis on

practice, learning, and change (Callahan & McCollum, 2002; Weinberger, 2002). HRD

researchers recognize that "[e]motions in the workplace cannot be ignored, and they cannot be

treated as independent and unrelated phenomen[a]" (Opengart, 2005, p. 58).

     Who-terms. Who-terms within the cluster *HRD as an entity* comprise both collective and

individual actors who have contributed to the formation of HRD. Specifically, academic entities

and individuals have been described as "AHRD," "academy," "educator," "HRD scholar,"

"scholar practitioner," and "HRD researcher," maintaining the HRD's "theory," "history," and

"philosophy." Non-academic actors have been labeled as "HR-practitioner," "practitioner,"

"HRD professional," "leader," "organizational leader," "facilitator," and "consultant," having engaged with the day-to-day practice of HRD. The audience or recipients of HRD knowledge and practice have been referred to as "adults," "readers," "stakeholders," "HRD profession", and "community."

"Partnership" (under other what-terms) might signal the HRD articles' emphasis on bridging the gap between theory (knowledge generated by academic actors) and practice (problems faced by non-academic actors). As prominent scholars in HRD have noted, synergistic collaboration between research and practice is at the core of maturation (Jacobs, 1997; Short, 2006). Fenwick (2004) described HRD as "a fluid coupling of academy-based theorizing and knowledge production with organizational practice" (p. 202). Despite HRD's orientation to embrace both research and practice, some have argued that the research-theory gap persists (Short, Keefer, & Stone, 2009).

How-terms. "HRD research," "inquiry," "research methodology," "research study," and "quest" depict the broad research concepts used in HRD. According to the how-terms, prevalent approaches used to study HRD consist of qualitative approaches (e.g., "content analysis," "narrative," and "qualitative case study"), theory building (e.g., "theory building research" and "theory development"), and literature reviews (e. g., "integrative literature review" and "comprehensive review").

As Table 1 shows, theory building appears to be a focal concept in the *HRD as an entity* cluster because it appeared in multiple forms in both what-terms and how-terms. Lynham (2000) defined theory building as "the purposeful process or recurring cycle by which coherent descriptions, explanations, and representations of observed or experienced phenomena are generated, verified, and refined" (p. 161). Since qualitative approaches have great potential for

theory development, some of the studies that have adopted those approaches have taken HRD

theoretical basis forward (Lynham, 2000).

Where-terms. Only four terms were categorized under where-terms of *HRD as an entity*:

"world," "organizational setting," "health care," and "classroom." (Raghuram et al., 2019)

Except for "health care," the rest of the terms match the broad nature of the cluster. The national

and international foci of HRD, as reflected in the work of pioneers (McLean & McLean, 2001),

justify the appearance of "world." As our analysis suggests, HRD as a practice takes place in

organizational settings, and classrooms. Interestingly, Map 2 shows that classroom, and

organizational settings seem to be cooling down, which suggests that these sites are becoming

less prevalent in HRD's research and practice.

To explore the underlying reasons for the emergence of "health care," we conducted a

manual word search on the abstracts, keywords, and titles of the included articles. We found two

literature reviews with a focus on the health care industry (Alias, 2015; Wekullo, 2018). We also

retrieved articles that concentrated on developing an HRD framework (e.g., organizational

learning and workforce development) for health care organizations (e.g., Chen & Kuo, 2011;

Conway, McMillan, & Becker, 2006). The specific references on the health care sector in these

articles led this term to stand out as where HRD is researched and practiced.

Cluster 2: Examining HRD Interventions (Green)

Examining HRD interventions ranked second in our analysis with 160 terms in its cluster.

The research focus on interventions fits the nature of HRD being "a field of practice" as

mentioned by a pioneer scholar (Kuchinke, 2000, p. 281). As our analysis incorporated all

articles from their start date, HRD's focus on interventions is a fundamental research interest in

HRD. One such interest is informing and improving on practice through interventions or

processes aimed at individual and organizational outcomes (T. N. Garavan, 1991; Hamlin, 2011). HRD researchers engage in evidence-based research or evaluate the role of performance improvement solutions. Founders of HRD defined its purpose as "produc[ing] new learning interventions to achieve the vision for all levels of the organization" (Chalofsky, 1992, p. 179). Such processes have been commonly included with the word, processes, in many of the core definitions of HRD (McLean & McLean, 2001). Such interventions suggest that designed activities need to help achieve HRD goals and outcomes (McLean, 2005).

What-terms. The what-terms that describe the content of *examining HRD interventions* illustrate two outstanding patterns. First are variables that HRD researchers have found worthy to examine at the individual level (e.g., "employee learning" and "work engagement") and the organizational level (e.g., "organizational support" and "climate"). While some of the variables were used to measure desired outcomes of HRD interventions (e.g., "training effectiveness" and "job performance"), others were included in quantitative studies as dependent, independent, mediator, or moderator variables (e.g., "work engagement").

The second observed pattern belongs to a range of terms that indicate HRD-related interventions. For example, some of the terms suggest a focus on interventions involved in organization development (e.g., "coaching" and "performance management") and some hint of training and development (e.g., "transfer" and "skill development"). Overall, these terms align with McLagan's (1989) organization development and training and development components of her HRD definition. The majority of the terms imply that a HRD intervention involves some kind of deliberate action and an attempt to influence desired organizational or individual outcomes (McLean, 2005). Some terms, such as "informal learning" and "work experience," suggest a less deliberate approach to HRD interventions.

How-terms. Reviewing the how-terms indicate that most of the research on *examining HRD interventions* has been quantitative. Forty-six of sixty, or 77%, of the how-terms point to the use of quantitative research methods (e.g., "hypothesis," "correlation," "mediating effect," "questionnaire," and "structural equation modelling"). Only three terms appeared in reference to qualitative research methods, which may have been used either to explore a practical problem (e.g., "exploratory study") or as a supplement to quantitative data (e.g., "qualitative data"). The remainder were common research-related terms that could belong to quantitative or qualitative studies (e.g., "sample," "data," and "empirical evidence"). Similarly, "internet" and "web" were among the common tools for data collection in the study of HRD interventions.

Who-terms. Regarding the study of HRD interventions, all who-terms, except "teacher" and "coach," point to providers of interventions at organizations. A range of organizational actors scaling from positions at "high level" (e.g., "supervisor") to "low level" (e.g., "subordinate") appeared as actors engaged in HRD interventions. Interestingly "trainer" and "trainee" emerged together, which illustrates a balanced attention to both the provider and the recipient f HRD interventions. It seems that HRD scholars have studied learning as a mutual experience in organizational setting, including both parties involved. One way to explain this finding can be the classic writings of HRD scholars that emphasized needs assessment as the first step of HRD processes (Sleezer & Sleezer, 1998; Werner, 2014).

Where-terms. Only three terms inform our understanding of where *examining HRD interventions* take place. "Company" is a generic term and most probably has been the common site where HRD researchers have collected data. Similarly, "public sector" as a large employer in many countries might have been the resource for data collection for some researchers. The emergence of the term 'Malaysia' as a where term cannot be explained by the data from

VOSviewer and needs further scrutiny. Probably, Malaysian HRD scholars have focused on

HRD interventions and have been more active than scholars from other countries. For example,

the government in Malaysia has acknowledged the importance of HRD in economic

development and have started several HRD initiatives (Abdullah, Rose, & Kumar, 2007). In

addition, there are several HRD graduate programs in Malaysian universities (e.g., Universiti

Putra and Universiti Malaysia Sarawak, plus several other universities). One can assume that the

Malaysian graduate HRD programs, especially at the doctoral level, have contributed to the

emergence of Malaysia as the site of HRD interventions research and practice.

Cluster 3: National HRD (Blue)

HRD scholars from noticeable numbers of countries have conducted research and

contributed to the understanding of HRD practices in their country contexts. *National HRD*

views HRD from the perspective of governments and societies (E. Cho & McLean, 2004; T.

Garavan, Wang, Matthews-Smith, Nagarathnam, & Lai, 2018; T. N. Garavan, McCarthy, &

Carbery, 2017; J. Wang & Wang, 2006). It steps beyond the meso-organizational and micro-

individual levels of analysis and addresses the role of economics and government initiatives to

develop a nation's human resources (McLean, 2004; G. G. Wang & Swanson, 2008). However,

as the network visualization shows *national HRD* is not as dense as the other two focal clusters

(i.e., *HRD as an entity* and *examining HRD interventions*). Terms associated with *national HRD*

are spread out on the map with distance among themselves and distance from other clusters. As

observable on Map 1, *national HRD* connects closely only to concepts in *HRD as an entity* and

has yet to reach out to *examining HRD interventions* and *career development in organizations*

clusters.

What-terms. The literature gravitates around programs, such as "VET (Vocational Education and Training)" and "vocational education," which are often government initiatives. Terms such as "talent development" and "talent management" most likely relate to "government policies'" employed to develop "national level" "human capital" for the purpose of "growth" and improvement of the "current state."

What-terms within the *national HRD* cluster also reveal a focus on economy, from a microeconomics (e.g., "competition" and "cost") and macroeconomics (e.g., "economic development" and "provision") perspectives. Other what-terms here exhibit a diverse range of concerns related to *national HRD,* such as "information technology," "decision making process," "social implication," and "innovative approach."

How-terms. No particular how-terms appeared in the *national HRD* cluster (only "academic literature"). It is likely that the majority of the writing in this area has been conceptual or anecdotal. Accessing national datasets or collecting macro-level data on HRD practices could be challenging given concerns for security. A lack of how-terms to demonstrate research methods used to study *national HRD* suggests an avenue for future HRD researchers. However, we need to ponder upon a lack of how-terms despite such pervasive interest. Maybe it is time for HRD scholars to seek systematic ways to apply appropriate methods, such as policy analysis, to provide an extra layer to understand the importance of *national HRD*.

Who-terms. Our data reflect that, on the one hand, "policy makers" and "governments," and, on the other hand, "private sectors" and "markets" are the main players in *national HRD* practices. Interestingly, HRD scholarship has discussed the roles that "HR professionals," "academics," and "talent" can play in making a difference in developing human resources at the

national level. Other who-terms seem to present the importance of "multiple stakeholders," such as the "nation," "talent," and "customer."

Where-terms. Table 1 lists a range of locations where publications have discussed *national HRD*. Researchers from 13 different countries encompassing five continents (i.e., all but Antartica) have written about HRD in their countries. Other than country names, organizational sites such as "business organization" and "SMEs" have appeared among *national HRD* where-terms. It may suggest that the majority of scholars have discussed how *national HRD* influences the functions of SMEs or local businesses. The geographically widespread scholarly attention to *national HRD* announces a unified interest in the topic.

Cluster 4: Career Development in Organizations (Yellow)

Many scholars in HRD have argued that the interest in career development—included in McLagan's (1989) classic definition of HRD—is dying. Some have questioned if HRD should continue paying attention to career development now that organizations invest less and less on careers and the long-term psychological contract between employer and employees is weaker (McDonald & Hite, 2005). The network visualization suggests that writing on career development topics has been on the periphery of the focal areas. Map 1 shows yellow circles demonstrating that career development terms are spread between *HRD as an entity* and *examining HRD interventions.* However, the content of the cluster suggests that researchers have regarded career development with a noteworthy focus. Terms under the career development topic area indicate an orientation to examining careers of under-represented groups in organizations (e.g., women, racial minorities, and elderly) and careful attention to the role of context. Such qualities are not to be dismissed and, if possible, need to be preserved in HRD to carve out a

niche. HRD's advocacy of under-represented career actors sets it apart from adjacent fields, such as management and organization, where careers are extensively studied (e.g., Gedro, 2009).

What-terms. As mentioned above, career development research focuses on individuals from under-represented populations. Terms that support this observation are "age," "gender," "race," and "disability." Along the same line, HRD research seems to have paid attention to the role of career development in an organizational context. For example, "discrimination," "cultural context," "law," and "norm" hint about HRD's contexts. In addition, our data portray career development processes that have been attractive to HRD scholars. These processes include career "adaptation," "adjustment," and "advancement" or "action learning," "mentoring," and "social network" involved in development.

How-terms. Terms associated with how career development has been studied in HRD provide evidence that qualitative methods have been the prominent methods in career development in HRD. All how-terms except for one (i.e., "comparative study") suggest the use of qualitative approaches (e.g., "[in]depth interview," "interview data," and "qualitative study"). Qualitative methods fit well with the emphasis on under-studied populations and the role of contexts in studying careers. HRD has traditionally been values-oriented (Kuchinke, 2010), which may have driven its attention to issues of under-studied populations, especially minorities. Scholars have employed a "phenomenological" approach and "critical incident techniques." HRD's qualitative orientation toward career research is in sharp contrast with the predominantly quantitative orientation of career studies in the management field (C. Lee et al., 2014), perhaps suggesting that HRD scholars are more interested in deep understanding of the concept, rather than the more superficial descriptive approaches. Lee et al.'s (2014) analysis showed that, except

for research on high-profile careers, other career research in management has adopted a quantitative approach.

Who-terms. Women seem to have gained the dominant attention from the *career development in organizations* cluster (e.g., "female," "women," and "women leader"). HRD has highlighted the importance of mentoring for career development with interest in both "mentor" and "protégé," since both have emerged as who career development research has examined. Specific attention has been diverted to "expatriate" careers; perhaps because of the large number of expatriate faculty and international students conducting HRD research while living and working outside their home countries. The presence of "role model" agrees with research outside of HRD that shows that role models are essential for individuals' career development, especially for minorities in the workplace (Gibson, 2004).

Where-terms. Career development research within HRD has focused on organizational settings (e.g., "corporation" and "MNC"). This finding is in contrast with contemporary research that has examined careers that go beyond the boundaries of an organization, such as "boundaryless" and "protean careers" (Arthur & Rousseau, 1996; Hall, 2004). Though the career literature within HRD is aware of such careers as discussed in HRD texts, not enough research has been conducted on these types to appear in our cluster. Similarly, there has been little international research interest in career development in HRD, as only one country ("United Kingdom") appeared in the data.

We found that "home" as a location associated with career development has been used in at least three manners. First, home has been used to describe the status of expatriates being away from their home countries. Second, it has been used to describe the career options of veterans

returning home. Third, home was related to the struggles of individuals to balance the demands of home and careers.

Cluster 5: HRD and Higher Education

Cluster 5 testifies to a disciplinary proximity between *HRD and higher education*. As Table 1 shows, higher education concepts have mostly connected to the *HRD as an entity* cluster rather than other clusters. One reason might be that HRD programs, especially in the United States, are housed in Colleges of Education, where they are likely to be grouped with the closest discipline: higher education or educational leadership (Holton & Trott, 1996), which may explain the emergence of this cluster. Another possible explanation is that most researchers are faculty members in higher education. As such, the closest and easiest organization in which to conduct research is higher education.

What-terms. What-terms point to research about HRD's own curriculum and education (e.g., "curriculum," "HRD education," and "HRD program"). Also, apparent are HRD scholars' interest in organizational concerns in higher education, such as "retention," "transition," and "turnover," as well as student success factors, such as "employability," "preparation," and "professional development." HRD research seems to have established its implications for higher education institutions both in terms of organization development and student preparation. Along the same line, "STEM," "science," and "engineering" refer to HRD researchers' attention to student preparation and development in science and engineering majors. A look at the overlay visualization graph (Map 3) shows that the attention of HRD to these subjects—especially for STEM and engineering—has arisen in recent years.

How-terms. No terms were found to indicate the methods employed to study *HRD and higher education*. A lack of how-terms may be attributed to the fact that empirical research has

not been necessarily conducted in higher education; instead, implications of research on higher

education have been discussed. Another explanation can be the emergent nature of the *HRD and*

higher education theme; for example, as evident in the overlay visualization, many of the terms

in this cluster (e.g., "HRD education") are new and have not been fully established.

   Who-terms. Who-terms described "stakeholders" within higher education institutions,

including individual actors, such as "student," "faculty," "instructor," "scholar," and

"administrator," as well as "departments" and "colleges." The specific reference to "veterans" as

a who-term in this cluster suggests the interest of HRD researchers in preparation and

professional development of veterans who enter higher education.

   Where-terms. As expected from the descriptions in previous categories, the three

identified 'where-terms' address higher education (i.e., "academia," "higher education

institution," and "university").

Revealing Gaps

   In the previous sections, we described the topic clusters based on the results of the

network visualization (Map 1 and Table 1). Here, we interpret findings from density (Map 2) and

overlay visualizations (Map 3). The density visualization includes colors ranging from yellow to

blue, exhibiting the density of research conducted on a topic relative to its neighboring terms

based on the number of articles associated with the topics (Van Eck & Waltman, 2011). The

closer the color is to yellow, the larger the number of articles in the neighborhood of a point. For

example, yellow areas, such as *employee*, contain the more intensely studied topics compared to

topics located in green areas. The other way around, the closer the color is to blue, that smaller

the number of terms that exist in the neighborhood of a point. For example, *HRD education*,

which appears in dark blue, is the least researched topic comparatively. The overlay visualization

(Map 3) accompanies a bar in the bottom corner that shows how the topics are mapped to color

based on their year of publication. Topics colored dark blue were published before 2008, topics

colored green appeared before 2014, and subjects colored yellow were published after 2014.

[Insert Map 2 here: Density visualization]

[Insert Map 3 here: Overlay visualization]

Based on the description above, one can interpret the density map and identify topics that

have been extensively studied. The overlay visualisation guides readers to topics that are recent

(yellow) and old (dark blue). We have combined the interpretations from the density and overlay

visualization in Figure 1 to showcase some of the gaps in the scholarship. Figure 1 displays four

cells of mature, nascent, trending, and growing topics. The terms displayed in Figure 1 are

examples from each cluster. This taxonomy will guide future researchers in identifying gaps in

HRD research. We will discuss strategies through which HRD researchers can use this taxonomy

to identify research topics in the next section.

[Insert Figure 1 here]

Discussion and Pathways for Future Research

Using topic mapping methods, we created a map of the HRD literature on the basis of

term co-occurrence in the title, abstract, and keywords of publications in the five affiliated

journals. We identified five topic clusters: *HRD as an entity*, *examining HRD interventions*,

national HRD, *career development in organizations*, and *HRD and higher education*. Identifying

these clusters was an important step toward understanding areas of distinctiveness that underlie

the separation between clusters, including what topics they primarily examine, the methods

employed to study the topics, the audience, the actors, and the contexts under focus. It is this

knowledge of distinctiveness that enables us to take the next step and identify pathways for

future research. Below, we discuss strategies through which scholars can leverage the insights of fellow HRD researchers and exchange insights between and beyond the clusters.

In a relatively recent and growing scholarship such as HRD, there are numerous potential research opportunities for scholars to explore. The downloadable network visualization map that accompanies this article helps researchers to detect possible and useful research ideas to pursue (https://tinyurl.com/qsoapgt). To help future scholars, we highlight strategies to leverage the accumulated knowledge in the mature clusters and opportunities to bridge research across clusters. To do so, we recommend that HRD scholars engage in boundary work. Gieryn (1983) proposed the concept of boundary work originally to explain the discursive strategies scientists apply to delimit science from non-science. Later, boundary work strategies have been generalized to describe any purposeful effort to influence the boundaries and demarcations affecting groups, organizations, and professions (Langley et al., 2019). In this context, the maps and our paper can be used as a basis for future HRD scholar's boundary work purposefully to influence where we can go next. To be more specific, we encourage scholars to consider collaborative, competitive, and configurational boundary work.

Collaborative boundary work to bridge gaps between clusters. *HRD as an entity* and *examining HRD interventions* present the two largest clusters that stand apart on the map with a distinct boundary. In comparison, the *career development in organizations* is a small cluster and is sparsely distributed in the space between the two hubs. Similarly, *national HRD* and *HRD and higher education* are far apart from *examining HRD interventions* and is attached to *HRD as an entity*. The distance between any two clusters suggests that relatively little research has been undertaken to link these topics and that their co-examination may yield valuable new research opportunities and insights.

To bridge the gaps between clusters, we recommend that HRD scholars engage in collaborative boundary work. Collaborative boundary work involves re-aligning the boundaries that separate the clusters to enable collaboration (Langley et al., 2019). Some strategies to do this include borrowing and mixing concepts and insights from two or more areas (Markoulli et al., 2017). Scholars may look at the downloadable network visualization map (https://tinyurl.com/qsoapgt) and identify potentially related but distant topics and pursue their link further. For example, *examining HRD interventions* and *HRD and higher education* are positioned at a large distance with fewer links between their topics. Future researchers may borrow insights from one another and mix topics to find attractive links to pursue. Examples include *examining HRD interventions* usefulness in addressing organizational concerns of HRD and *higher education* institutions or student success. Another example of two clusters with a large distance between them are *NHRD* and *HRD interventions*. There is clearly a need to understand how HRD interventions are used in NHRD, as well as what specific interventions are used.

Another strategy to bridge the gap between clusters is to pursue a research question derived from theories and research findings in one cluster that might be able to help inform important underexplored research questions in another cluster. Using the last two clusters referenced, researchers might explore, from the many interventions in HRD, which interventions have been used in NHRD, which have not been used and why, and how successful have the interventions been in promulgating NHRD.

Also, collaborative boundary work can take the form of stepping into the blue zones of the density map and generating yellow circles in the overlay visualization. As a starting point, we recommend that HRD scholars invest in pursuing growing concepts presented in our review

(Cell 4, Figure 1). Further, reaching beyond the present concepts and borrowing from outside of HRD may lead to growth and expansion of the whole map into new horizons. For example, *HRD and higher education* seems to have paid attention to science and engineering professions in recent years. What topics are actually pursued seems to depend on the interests and capabilities of the specific researchers and their ability to define the relevance of the topic to HRD. Researchers need to focus on the concepts that can be adopted or adapted to help grow HRD and preserve its essence. One strategy is simultaneously to examine the downloadable map and our review and mix the newly adopted topics with existing concepts, especially those in the focal areas. The relatively recent re-emergence of NHRD came about through combining the core concepts of HRD with concepts from economics, community development, sociology, and many others. While there has been some resistance to the concept of NHRD (Wang & Swanson, 2008), it has arisen through the failure of those scholars to understand the broadening nature of HRD as it attempts to close the gaps between boundaries.

Competitive boundary work to differentiate the peripheral clusters. *Career development in organizations* and *HRD and higher education* as low weight and sparse topic areas call for competitive boundary work. Competitive boundary work involves creating demarcations and mobilizing boundaries to establish advantage over others (Langley et al., 2019). Creating a *competitive advantage* over the research conducted in neighboring fields is what career and higher education scholars in HRD might pursue. To do so, we encourage HRD researchers to invest in linking their research topics to focal topics. For example, HRD career research may capitalize on its link to concerns of under-studied populations, women, gender, and diversity, which are established in the *HRD as an entity.* Likewise, researchers focusing on *HRD and higher education* might explore more extensively those approaches that have typically been

explored by those interested in *examining HRD interventions*, to determine more fully the interventions that might have an impact on higher education for those scholars interested in such an outcome.

Also, as career studies in management, a neighboring field, has studied boundaryless careers that go beyond a single employer; HRD career researchers could investigate the boundaryless perspective further. HRD scholars can bring their special focus on developmental relationships (Rock & Garavan, 2006) and add value to the understanding of careers to expand beyond a single employer in the contemporary world of work. Similarly, future research may determine the fate of HRD's higher education cluster. It can either grow to integrate with or separate from HRD's core clusters depending on which links the researchers decide to pursue. We suggest that it takes a purposeful effort to delimit HRD's higher education research and define its advantage over research in other disciplinary traditions about higher education topics.

Competitive boundary work calls for amplifying the theoretical and empirical writing in the peripheral clusters. If we are to keep *career development in organizations* and *HRD and higher education* as part of the overall map of HRD, we need to write and publish more about them, highlighting how the research we do complements what others do. Surprisingly, ethics did not show up as a cluster or even as an item in a cluster for HRD. This is a field that has traditionally belonged to philosophy and to a lesser extent management. However, Swanson (1999) claimed that all of HRD rested on a rug of ethics. If ethics is truly going to be a part of HRD, however, as with *career development in organizations* and *HRD and higher education*, HRD scholars need to be doing more research and writing about this concept.

Configurational boundary work to direct HRD. As discussed earlier, *HRD as an entity* and *examining HRD interventions* are the two largest and concentrated topics. Therefore,

scholars in *HRD as an entity* and *examining HRD interventions* domains may take on configurational boundary work to advance HRD. Configurational boundary work involves defining patterns of both integration and differentiation; making sure that certain activities are brought together, whereas others are kept apart (Langley et al., 2018). To do so, prominent scholars may adopt the following strategies.

First, the intensity visualization suggests that *HRD as an entity* and *examining HRD interventions* have not yet reached the highest research intensity. Had these clusters reached the fullest capacity, they would have appeared in red rather than yellow on Map 2. This observation suggests that it may be too soon to let go of the mature concepts and the large circles on Map 1. Instead, we still need to invest in magnifying and trimming the core concepts in HRD to ensure that HRD's identity sustains over time. To what extent HRD holds its core topic areas depends on the amount of research conducted about such topics. Our review assists future researchers by improving their ability to see which topics within the *HRD as an entity* and *examining HRD interventions* clusters call for additional research and publications. Amplifying the research on the focal clusters is particularly important if we want readers from outside of HRD to know what we are about.

Second, *HRD as an entity* and *examining HRD interventions* may orient the advantage of *national HRD*, *career development in organizations*, and *HRD and higher education*. Through writing and publishing, HRD scholars may influence fellow scholars' efforts in the areas of *national HRD*, career, and higher education and inform them to apply HRD theories and concepts in their research. As the final strategy, HRD scholars may take on an abduction process, which involves finding contradictions between the data and theories (Fann, 2012). Scholars may interpret the weight, distance, and relatedness of the topics in new ways based on their

backgrounds. Any surprising observation in our data hints to opportunities for further exploration

and advancement of HRD. For example, based on our backgrounds we found the following

observations surprising. Given the extensive number of articles focused on *NHRD*, it was

surprising that there was such a distance between it and *examining HRD interventions*. Authors

in the area of NHRD may have been so focused on presenting NHRD as a new focus within

HRD that they were not wanting to pull in the traditional HRD interventions. Likewise, within

the context of *HRD and higher education*, it was surprising that there was such a narrow focus

on STEM and engineering. We expected that we would find the context of healthcare to be much

more prevalent in our findings given its importance and the sharing of so many of our

interventions with the healthcare professions. Finally, we expected to see a cluster of critical

HRD, given its rapid growth in recent years (Bierema & Callahan, 2014; Callahan, 2007;

Collins, 2016). At the same time, such absence could be explained by the number of

marginalized groups that showed up in the stakeholders included in the cluster of *HRD as an

entity*.

Limitations and Practical Implications

While the clusters are empirically grounded, labelling them involved subjective

interpretations. Also, we built on our own backgrounds to note the considerable patterns in the

data. Other scholars may interpret the weight, distance, and relatedness of the topics in new ways

based on their backgrounds. Using the five HRD journals imposed some limitations on our

findings, as some HRD research has been published in outlets outside the HRD affiliate journals.

We were unable to include data from *EJTD*'s predecessor journal (Journal of European Industrial

Training) in our data analysis. We may have missed some concepts that HRD researchers have

published in journals outside of our data pool. While imperfect, the set of five journals have been

used by previous researchers to explore state of the art of HRD research, such as past citation analysis studies (e.g., Jeung et al., 2011; Jo et al., 2009). Here, we were constrained in our research to the inclusion of English language journals, which may have led to a smaller pool of *national HRD* terms.

Our findings can guide interested practitioners in their search for actionable knowledge on HRD. It might also help them to answer the troublesome question that they might receive from clients and management about how HRD is different from/the same as human resource management. Further, as professional organizations and practitioners struggle to create competencies for HRD professionals, this article may well suggest the boundaries in which the competencies are to be set.

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