

## Article

# Exploring Deficiencies in the Professional Capabilities of Novice Practitioners to Reshape the Undergraduate Human Resource Development Curriculum in South Korea

Hee-Jun Choi <sup>1</sup>  and Ji-Hye Park <sup>2,\*</sup>
<sup>1</sup> Department of Education, Hongik University, Seoul 04066, Korea

<sup>2</sup> Department of Education, Kookmin University, Seoul 02707, Korea

\* Correspondence: jpark22@kookmin.ac.kr

**Abstract:** At a time of global economic crisis, professional programs in universities are demanded to make continuous improvements based on new information on performance gaps of novice incumbents, in order to make their graduates more competitive, which ultimately leads to their job security and decent work. Accordingly, this study aimed to assess discrepancies in the importance and performance levels of professional capabilities required of novice Human Resource Development (HRD) practitioners and priorities in instructional needs, as perceived by immediate superiors as an initial effort to improve the curricula of undergraduate HRD courses. Data were collected from 193 HRD supervisors in organizations in South Korea and were analyzed using paired *t*-test and the ranked discrepancy model. These findings indicated that instructional needs in terms of professional capabilities were high in the following order: instructional design, learning science, career and leadership development, coaching, training delivery and facilitation, knowledge management, and technology application. The results implied that most undergraduate courses developed for the education of prospective HRD practitioners need to be updated and improved. This study also proposed an idiosyncratic and periodic formative evaluation process for the ongoing improvement of professional programs in universities as a part of efforts to sustain the global economic growth.

**Keywords:** sustainable development; higher education; novice human resource development practitioners; professional capabilities; undergraduate human resource development curriculum



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## 1. Introduction

The COVID-19 pandemic, energy crisis, and inflation have continued to accelerate the global economic recession. This economic crisis has been a threat to full and productive employment and decent work for all [1]. To overcome the economic crisis and promote sustainable economic growth, universities across the world should strive to play fundamental roles in offering high-quality educational programs. This means that higher education institutions have a social responsibility to enhance their students' capabilities for sustainable development [2]. Such responsibility of higher education institutions might be related to Goal 4 and 8 of the Sustainable Development Goals (SDGs). SDG 4 highlights “ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all”, and SDG 8 focuses on “promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all” [1].

Over the two previous decades, higher education institutions have exerted considerable effort to cultivate competitive human resources that can meet radically changing societal and industrial demands. In particular, many universities in western countries have been seemingly establishing increasingly closer relations to industries to obtain added insights into innovative changes in their curricula, so that their students could graduate with suitable capabilities in performing fluxional tasks in an age of turbulence and uncertainty [3,4].

According to the press release by the Korean Economic Research Institute [5], university graduate employment rate was 75.2%, and about 50% of university graduates had jobs that did not match their university major in South Korea. Among the 37 OECD countries, South Korea's employment rate was ranked 31, and mismatch rate was ranked 1. These facts imply that South Korean universities should adopt decisive actions to help their graduates find decent jobs.

Recently, many universities in South Korea have been struggling to equip students with appropriate knowledge, skills, and attitudes for the workplace under rapidly changing circumstances. As part of such an effort, South Korean universities have been actively implementing additional field trainings and internships as an alternative means to enable timely coping with industrial needs [6]. Moreover, the Ministry of Education in South Korea has institutionally supported such efforts by universities by establishing and enforcing the operating regulations for the field training of university students since 2016 [6]. In 2021, the South Korean government established operating regulations for a one-semester practicum in universities [7].

However, despite such hard efforts of many universities in South Korea as well as those in western countries, graduates continue to exhibit difficulty in landing their desired employment with sufficient capabilities to successfully perform tasks [8,9]. On the other hand, employers in certain industry fields face challenges in acquiring qualified candidates equipped with appropriate knowledge, skills, and attitudes for positions being offered [10]. These facts imply that higher educational institutions need substantial changes in terms of innovatively reforming the curriculum to provide students with competitive capabilities that consist of knowledge, skills, and attitudes expected by future employers.

Some scholars believe that a university curriculum is mainly associated with structure, such as credit hour frames, course listings, and university calendars, whereas others propose that the curriculum includes formal and informal learning experiences offered by educational institutions [11]. On the other hand, many faculties and administrators regard the curriculum as formal learning experiences that include colloquia, seminars, and workshops that students have undertaken while completing their degree [12]. However, Lattuca and Stark [13] argue that these notions of the curriculum are not helpful for faculties and administrators in educational institutions, especially in improving the curricula, because they lack articulation and critical considerations of education in the process of improving the curriculum.

To overcome this conceptual issue about the curriculum, Lattuca and Stark [13] proposed a comprehensive definition of the curriculum that can be useful for individuals responsible for developing or revising a university curriculum. Lattuca and Stark [13] conceptualized a curriculum as a deliberate academic plan in the sociocultural context and formulated a model of the academic plan. The model indicated key decision points that may effectively improve the learning experience of university students. Particularly, the model emphasizes eight elements as decision points, namely, purposes, content, sequence, learners, instructional processes, instructional resources, evaluation, and adjustment in educational environments by considering the influences of the factors of the sociocultural context, such as market forces, governments, and accrediting agencies, as well as influences internal to institutions.

The subsequent text presents the details of the eight elements proposed by Lattuca and Stark [13]. Purposes denote knowledge, skills, and attitudes (i.e., capabilities) to be learned; content indicates the subject matters selected to transmit such capabilities. Sequence pertains to an arrangement of subject matters and learning experiences, whereas learners indicate how an academic plan will address specific target audiences. Moreover, instructional processes pertain to instructional and learning activities; instructional resources represent materials and/or settings to be adopted in instructional processes. Evaluation denotes the methods adopted to determine whether or not these elements are appropriate. Lastly, adjustment indicates improvements based on evaluation results.

The current study focused on obtaining insights necessary for reshaping a set of undergraduate courses for human resource development (HRD) offered by departments of education in South Korean universities. Lattuca and Stark [13] contended that the model of the academic plan can be applicable to all levels of university curricula for a single lesson, course, program or major, college or school, and university as a whole. Accordingly, the model of the academic plan could be used to obtain implications for the improvement of a set of undergraduate courses for HRD with a consideration of the influence of the job market force.

HRD is defined as “a set of systematic and planned activities designed by an organization to provide its members with the opportunities to learn necessary skills to meet current and future job demands” [14]. All aspects of HRD have been focused on molding the most superior workforce [15], and scholars and practitioners of HRD are playing critical roles in providing a set of evolving solutions toward this end [16]. In this vein, the quality of undergraduate courses for cultivating prospective HRD practitioners is of great concern to quite a few workplaces.

In 2004, the American Society for Training and Development presented various foundational competencies and particular areas of expertise that HRD professionals need to develop and possess in addition to key roles through the competency model [17]. According to the model, HRD professionals need to continuously develop foundational competencies categorized into three areas, namely, personal, interpersonal, and business/management competencies, through effort and work experience. In addition, HRD professionals need to develop various areas of expertise, such as designing learning, delivering training, improving human performance, facilitating organizational change, and so on, to successfully perform key roles as a learning strategist, business partner, project manager, and professional specialist.

In 2019, the Association for Talent Development (ATD, formerly the American Society for Training and Development) newly introduced the talent development capability model. It is a framework for presenting which aspects HRD practitioners need to know and do to develop themselves, their organizations, and organizational members [18]. The model consists of three main components called domains of practice, namely, developing professional capability (knowledge and skills that HRD practitioners should possess to successfully conduct tasks related to learning such as training and development), building personal capability (soft skills, such as communication, decision-making, and collaboration skills, required by all employees including HRD practitioners), and impacting organizational capability (knowledge, skills, and abilities necessary to effectively conduct tasks or activities for improving organizational performance, operating results, and productivity).

Faculties and administrators in charge of revising undergraduate HRD courses in South Korean universities may need to pay more attention to the development of professional capability more than they do to the two other domains of practice. The reason is that departments of education in South Korean universities generally offer undergraduate HRD courses. In this case, the expertise of the faculties mainly focuses on training and development. Accordingly, undergraduate HRD courses need to highlight the domain of practice related with learning, that is, developing professional capability.

On the other hand, undergraduate students in South Korea may develop two other domains of practice (i.e., building personal capability and impacting organizational capability) through the related liberal arts and business administration courses. The reasons are as follows. The majority of universities in South Korea are offering various liberal arts courses tailored to soft skills such as communication, cultural awareness, and ethical behavior. This means that it might be better for undergraduate students to build personal capability by taking related liberal arts courses. In addition, colleges of business administration in South Korea are generally offering multiple courses related to mechanisms that drive organizational performance, operating results, and productivity such as business strategy, organization development and change, and human resource management. There-

fore, undergraduate students tend to develop knowledge and skills related to impacting organizational capability by taking those courses.

A few scholars conducted studies on HRD courses or programs offered by universities. However, these studies were limited by the following aspects. First, the majority of studies focused only on graduate HRD programs or courses offered by universities in western countries such as the United States and the United Kingdom [19–22]. Second, the studies rarely address the real discrepancy between the professional capabilities of novice HRD practitioners with a bachelor's degree have and those expected by their organizations [19,22,23]. Third, only a few studies presented arguments about the direction of the curriculum of HRD programs and courses. However, empirical evidence did not seem to support such arguments by the previous studies [24].

Accordingly, this study intended to focus on a set of undergraduate HRD courses, which are related to the development of professional capability presented by the ATD [18], in South Korea. In South Korean organizations, the majority of novice HRD practitioners have only a bachelor's degree [25]. Therefore, empirically exploring deficiencies in the professional capabilities of novice HRD practitioners with a bachelor's degree may be very significant to obtain insights on a systematic improvement of a set of undergraduate HRD courses.

The ATD [18] presents the knowledge and skills required for HRD practitioners to be successful in tasks through a well-organized and systematic model (i.e., the talent development capability model). However, it might be difficult to identify the professional capabilities that novice HRD practitioners should know and do with overriding priorities. Accordingly, empirically investigating the key professional capabilities that novice HRD practitioners relatively lack and need to further develop is necessary, because information can also be used to systematically improve the curricula of undergraduate HRD courses.

This study focused on the purposes (i.e., capabilities) of the eight elements in the model of an academic plan proposed by Lattuca and Stark [13]. The primary reason is that due to purposes, which is the first element in the academic plan, may be most universally applicable to all universities or departments regardless of institutional and learner characteristics. Especially, identifying purposes that play a role as the first starting point of the reform of undergraduate HRD courses and are instrumental in setting clear directions for the improvement of the curricula is critical.

In summary, this study aimed to identify priorities in terms of the professional capabilities required of novice HRD practitioners with a bachelor's degree and the relative level of each capability performed, which were perceived by immediate superiors. In addition, the definitive purpose of the study was to identify priorities in instructional needs by systematically assessing discrepancies between importance and performance levels for each professional capability required of novice HRD practitioners as perceived by immediate superiors. This study may be very significant in the sense that it is an initial effort to improve the curricula of undergraduate HRD courses offered by departments of education in South Korean universities based on empirical evidence.

Toward this end, the study intends to address the following research questions:

1. What are the levels of importance and performance of the professional capabilities required of novice HRD practitioners as perceived by immediate superiors?
2. What are the priorities in instructional needs for professional capabilities required of novice HRD practitioners?

## 2. Methods

### 2.1. Population and Sample

The study recruited immediate superiors of novice HRD practitioners working for South Korean companies. All of them were supervisors with various positions. The study collected data from 193 HRD supervisors with more than five years of experience as HRD practitioners. Out of 193 respondents, 117 (60.6%) were male, and 76 (39.4%) were female. A total of 131 (67.9%) achieved a bachelor's degree, and 55 (28.5%) completed a master's

or a doctoral degree. The majority of participants belonged to leading conglomerates ( $n = 132$ , 68.4%), and the rest of them worked for public institutions or small and medium-sized companies that focus on HRD ( $n = 61$ , 31.6%). All of them voluntarily agreed to participate in this study, and all information drawn from them was used anonymously. Table 1 presents detailed information on the participants.

**Table 1.** Demographics of participants.

Demographics		N	%
Gender	Male	117	60.6
	Female	76	39.4
Education	2- or 3-year college	7	3.6
	4-year university	131	67.9
	Graduate	55	28.5
Organization	Conglomerates	132	68.4
	Public institutions	17	8.8
	Others	44	22.8

## 2.2. Data Collection and Measures

This study used quantitative data derived from a survey questionnaire (Appendix A). To obtain an adequate number of respondents, this study adopted the exponential non-discriminative snowball sampling method [26]. The study data were collected from HRD supervisors with five or more years of working experience in the field. As expected, there are not many HRD supervisors with such experience in a single company. Therefore, the researchers started collecting data from acquainted HRD supervisors. The details of the sampling procedure were as follows. First, the researchers contacted 35 HRD practitioners with more than five years of experience in private communities of HRD practice. They worked as supervisors in organizations that represent a diverse range of industries such as finance and insurance, manufacturing, construction, distribution services, and information and communication. Fortunately, all of them willingly agreed to participate, and each provided multiple referrals. The majority of new referrals readily agreed to participate and provided additional referrals. This process was repeated until 200 subjects were recruited because a sample size of 200 is acceptable when an alpha level of 0.05 is adopted and the effect size is assumed to range between small (0.2) and moderate (0.5) [27]. Fortunately, the effect sizes of all variables were over 0.6 in the current study; therefore, a sample size of 193 is acceptable [27]. Afterward, researchers sent the questionnaire via mail and included a return envelope. A total of 195 out of 200 supervisors returned the questionnaires, where two were considered invalid due to missing data (i.e., no educational background or too many missing items). Thus, the return rate was calculated as 96.5%, which is acceptable [28].

This study employed a survey questionnaire with a five-point Likert scale to measure the perceptions of HRD supervisors regarding the levels of importance and performance of the professional capabilities required of novice HRD practitioners. A Likert scale produces ordinal data. The use of parametric versus non-parametric methods for the analysis of ordinal data has been controversial for decades. Mircioiu and Atkinson [29], however, concluded that parametric methods are more appropriate in the case of Likert ordinal data with high response rates and multiple items. Therefore, the data of this study were analyzed by parametric methods.

The questionnaire was originally comprised of eight constructs related to professional capabilities, namely, learning science, instructional design, training delivery and facilitation, technology application, knowledge management, career and leadership development, coaching, and evaluating impact. Confirmatory factor analysis was conducted to confirm constructs and items of the measure using varimax rotation [27]. The results of factor



analysis, however, indicated that evaluating impact should be omitted. Thus, the items for evaluating impact were combined with those of instructional design. The reason may be because evaluating impact could be conceptually subsumed under instructional design. In other words, the instructional design process includes formative and summative evaluation, which require knowledge and application of quantitative and qualitative research methods [30].

The ATD [18] offers a very specific self-assessment tool for measuring professional capabilities in HRD. However, the tool is quite long and contains some items that are overlapped in terms of the information collected. Furthermore, assessing capabilities using less items is necessary for reducing the burden, fatigue, and the likelihood of participants to reject participation in the study [31]. Especially, in corporate settings, using a relatively short questionnaire may be desirable, because the majority of employees have time constraints for responding to a survey during work hours [32]. Therefore, the researchers revised the self-assessment tool on the basis of the talent development capability model, such that the number of items could be reduced as much as possible.

The questionnaire consisted of 20 items that reflect the seven HRD capabilities. The numbers of items for each capability ranged from two to four. In addition, the questionnaire consisted of two columns for each item. The left column was intended to measure the level of importance of the professional capabilities required of novice HRD practitioners. The right column was to measure the performance levels of the professional capabilities. In other words, the descriptions of the items used to measure the level of importance were identical to those used to measure the level of performance. In addition, the descriptions of the scales for importance levels (i.e., none, below average, average, above average, and essential) were nearly the same as those for performance level (i.e., none, below average, average, above average, and exceptional). Sample questions are as follows: "Knowledge and applications of needs assessment approaches and techniques," "Skill in creating positive learning environments," and "Knowledge of methods and techniques for disseminating and sharing organizational knowledge." Cronbach's alpha coefficients for learning science, instructional design, training delivery and facilitation, technology application, knowledge management, career and leadership development, and coaching were 0.83, 0.80, 0.83, 0.75, 0.70, 0.85, and 0.73, respectively.

### 2.3. Data Analysis

This study employed three statistical analysis methods, namely, descriptive statistics, paired *t*-test, and the Ranked Discrepancy Model (RDM). Data for answering the first research question were analyzed using descriptive statistics, including means, standard deviation, skewness, and kurtosis. A paired *t*-test was adopted as a preliminary data analysis to answer the second research question. It was conducted to determine whether statistically significant mean differences exist between two sets of observations, namely, importance and performance levels, for the same subject. Furthermore, the researchers used the RDM, a novel approach for determining instructional needs through a systematic assessment of discrepancies between the importance and performance levels of each professional capability. The RDM presented several crucial advantages that render the interpretation of results and improvement of rigor in discrepancy analysis easy and simple [33]. Consequently, the RDM may be one of the most appropriate methods for statistical analysis to identify priorities in instructional needs for professional capabilities [34]. This study adopted pairwise deletion to treat missing data. Pairwise deletion is considered less biased for the missing completely at random data [35]. Since this study had only three missing data, the study results might not have been affected.

## 3. Results

### 3.1. Research Question 1

Descriptive statistics were conducted to identify the priorities of professional capabilities required of novice HRD practitioners and the relative level of each capability. In

this regard, the researchers tested normality to determine whether or not further analyses can be conducted. According to Hair et al. [27] and Bryne [36], the criteria of normality are skewness  $< |2|$  and kurtosis  $< |7|$ . Therefore, the normality assumptions of all variables for this study were satisfied (Tables 2 and 3). Specifically, Table 2 indicates the rank of the importance level of professional capabilities required of novice HRD practitioners as perceived by their supervisors based on the mean scores for each professional capability. Out of the seven professional capabilities, the importance level of training delivery and facilitation ranked highest, whereas that of technology application was found to be the lowest.

**Table 2.** Descriptive statistics and rank of importance of the capabilities (n = 193).

Rank	Capabilities	M	SD	Min.	Max.	Skewness	Kurtosis
1	Training Delivery and Facilitation	4.52	0.53	2.00	5.00	−1.15	1.90
2	Instructional Design	4.48	0.46	2.25	5.00	−0.95	1.66
3	Learning Science	4.34	0.63	2.33	5.00	−0.77	0.18
4	Coaching	4.08	0.70	2.00	5.00	−0.67	0.15
5	Knowledge Management	4.05	0.58	2.00	5.00	−0.53	0.89
6	Career and Leadership Development	3.81	0.68	2.00	5.00	−0.45	0.07
7	Technology Application	3.67	0.83	2.00	5.00	−0.42	−0.51

**Table 3.** Descriptive statistics and ranks of the performance level of the capabilities (n = 193).

Rank	Capabilities	M	SD	Min.	Max.	Skewness	Kurtosis
1	Training Delivery and Facilitation	3.89	0.70	2.00	5.00	−0.19	−0.27
2	Instructional Design	3.75	0.70	2.00	5.00	−0.33	−0.34
3	Knowledge Management	3.61	0.68	2.00	5.00	−0.11	−0.02
4	Technology Application	3.61	0.75	1.50	5.00	−0.14	−0.17
5	Learning Science	3.49	0.76	1.00	5.00	−0.13	0.00
6	Coaching	3.39	0.82	1.50	5.00	−0.23	−0.26
7	Career and Leadership Development	3.10	0.82	1.00	5.00	−0.17	−0.44

Table 3 presents the performance levels of professional capabilities. Ranking was made on the basis of the mean scores for each capability. The findings indicated that novice HRD practitioners displayed the highest level of performance for training delivery and facilitation. Conversely, novice HRD practitioners exhibited lower levels of performance in coaching and career and leadership development than those of the other professional capabilities.

### 3.2. Research Question 2

A paired *t*-test was conducted as a preliminary data analysis to answer the second research question. The study found statistically significant mean differences between the importance and performance levels of six professional capabilities (i.e., training delivery and facilitation, instructional design, learning science, coaching, knowledge management, and career and leadership development) at the  $p < 0.001$  level. On the other hand, no statistically significant mean differences were observed between importance and performance levels for in technology application. Table 4 presents additional specific information.

**Table 4.** Result of paired *t*-test of the capabilities.

No	Capabilities	Importance Level		Performance Level		Difference			df	t
		M	SD	M	SD	M	SD	SE		
1	Training Delivery and Facilitation	4.52	0.53	3.89	0.70	0.62	0.75	0.05	192	11.62 ***
2	Instructional Design	4.48	0.46	3.75	0.70	0.74	0.69	0.05	190	14.73 ***
3	Learning Science	4.34	0.63	3.49	0.76	0.85	0.81	0.06	192	14.60 ***
4	Coaching	4.08	0.70	3.39	0.82	0.69	0.85	0.06	192	11.20 ***
5	Knowledge Management	4.05	0.58	3.61	0.68	0.44	0.76	0.05	191	8.05 ***
6	Career and Leadership Development	3.81	0.68	3.11	0.82	0.69	0.82	0.06	192	11.76 ***
7	Technology Application	3.67	0.83	3.61	0.75	0.06	0.98	0.07	192	0.88

\*\*\*  $p < 0.001$ .

Table 5 indicates the priorities in instructional needs using the RDM to assess discrepancies between the importance and performance levels for each professional capability. Analysis using the RDM was systematically implemented in a step-by-step manner. First, the number of occurrences for negative ranks (NR), positive ranks (PR), and tied ranks were calculated using the Statistical Package for the Social Science as shown in the left column of Table 5. NR denotes that the ratings for the performance level of respondents are less than those for importance level. PRs indicate that the rating for performance level are more than those for importance level. Tied ranks indicate that the performance ratings are equal to the ratings for importance levels. Second, the number of occurrences of NR, PR, and TR were converted into percentages (middle column in Table 5). Third, relative weights (*W*) were applied to NR% ( $W_{NR} = NR\% \times -1$ ), PR% ( $W_{PR} = PR\% \times 1$ ), and TR% ( $W_{TR} = TR\% \times 0$ ). Lastly, the Ranked Discrepancy Scores (RDS), which a standardized score that ranges from  $-100$  to  $100$ , were calculated by summing the weights of each rank (i.e.,  $W_{NR} + W_{PR} + W_{TR}$ ). A negative RDS indicates that an instructional need exists, whereas a positive RDS implies that no instructional need exists. According to the result of the RDM presented in Table 5, the need to learning instructional design (RDS =  $-68.06$ ) is the top priority for novice HRD practitioners. On the other hand, they had little instructional need for technology application (i.e., RDS =  $-2.59$ ). Detailed information can be found in Table 5.

**Table 5.** Result of the RDM of the capabilities.

Rank	Capabilities	Wilcoxon Sign Ranks			n	Wilcoxon Ranks Converted to %			Weights			RDS
		NR = P < I	PR = P > I	TR = P = I		NR%	PR%	TR%	NR% (−1)	PR% (1)	TR% (0)	
1	Instructional Design	143	13	35	191	74.87	6.81	18.32	−74.87	6.81	0	−68.06
2	Learning Science	139	10	44	193	72.02	5.18	22.80	−72.02	5.18	0	−66.84
3	Career and Leadership Development	144	20	29	193	74.61	10.36	15.03	−74.61	10.36	0	−64.25
4	Coaching	128	21	44	193	66.32	10.88	22.80	−66.32	10.88	0	−55.44
5	Training Delivery and Facilitation	127	22	44	193	65.80	11.40	22.80	−65.80	11.40	0	−54.40
6	Knowledge Management	103	27	62	192	53.65	14.06	32.29	−53.65	14.06	0	−39.59
7	Technology Application	79	74	40	193	40.93	38.34	20.73	−40.93	38.34	0	−2.59

Note. NR = Negative Ranks, PR = Positive Ranks, TR = Tied Ranks, P = Performance, I = Importance, RDS = Ranked Discrepancy Score.



## 4. Discussion

### 4.1. Priorities for HRD Professional Capabilities and Performance Levels

This study found that the importance levels of the professional capabilities required of novice HRD practitioners, as perceived by their supervisors, were high in the following order: training delivery and facilitation, instructional design, learning science, coaching, knowledge management, career and leadership development, and technology application. This result implied that the main tasks of novice HRD practitioners should primarily focus on training delivery and facilitation and instructional design for various types of training programs through the appropriate application of learning theories, such as behavioral, cognitive, and constructivist learning theories. This finding empirically confirmed two main competencies (i.e., training delivery/management and instructional design) for HRD professionals as analyzed by a senior HR professional [37]. On the other hand, coaching, knowledge management, and career and leadership development seem to be more required of experienced HRD practitioners than novice HRD practitioners in South Korean companies [38]. The most remarkable finding was that technology application ranked lowest in terms of importance, which implies that novice HRD practitioners already possess the capability related to technology application to such a level where no problem is noted in performing the tasks given to them. However, this result does not suggest that technology application was less important than the other capabilities. This result may be supported by the fact that the majority of novice HRD practitioners belong to the MZ generation, which is remarkably comfortable with online and mobile technologies, including the use of diverse applications [39,40]. These findings may be significant in that the priorities of professional capabilities required of novice HRD practitioners were determined using empirical evidence drawn from incumbent HRD supervisors.

The results also demonstrate that the relative performance levels of the professional capabilities were high in the order of training delivery and facilitation, instructional design, knowledge management, technology application, learning science, coaching, and career and leadership development. This finding implies that novice HRD practitioners may have placed a bigger emphasis on studying facilitation methods and instructional design models and may have had relatively many chances to experience multiple instructional delivery options in undergraduate courses. Conversely, they seemingly obtained less chances to take courses related to coaching and career and leadership development at university and to perform such tasks in their companies [23]. Interestingly, the findings revealed that novice HRD practitioners displayed relatively higher levels of performance in terms of knowledge management. In other words, novice HRD practitioners are capable of knowledge management in relation to techniques for strategically organizing, disseminating, and sharing knowledge to the level expected by their supervisors. The reason may be due to their many experiences with team projects that require skills related to the organization and sharing of information in their courses [41,42]. The findings can help stakeholders identify the relative level of each professional capability that novice HRD practitioners with a bachelor's degree possess and take appropriate actions to enhance their job performance.

### 4.2. Instructional Needs for Capabilities Required of Novice HRD Practitioners

This study found that the instructional needs for the professional capabilities required of novice HRD practitioners were high in the order of instructional design, learning science, career and leadership development, coaching, training delivery and facilitation, knowledge management, and technology application. These findings were based on the assessment of discrepancies between the importance and performance levels of each professional capability. The findings point to instructional design as the capability with the highest rank in terms of instructional needs, whereas technology application was ranked as the lowest. These findings indicate that instructional design is the biggest shortfall in the professional capabilities required of novice HRD practitioners compared to its importance, whereas novice HRD practitioners have the technology application capability nearly comparable to its importance.

The direct implication of this study is related to the scope of undergraduate courses that require revision. The fact that the majority of professional capabilities required of novice HRD practitioners displayed large discrepancies implies that nearly all undergraduate courses developed for the education of prospective HRD practitioners need to be updated and improved so that students can be equipped with proper capabilities. Conversely, formal and informal instruction for technology application might not need revision at present, that is, formal and informal learning experiences that undergraduate students undertook for technology application were relatively appropriate and effective. The findings indirectly connote the broad direction of how undergraduate HRD courses should be designed to remove discrepancies between desirable and current status in the professional capabilities of novice HRD practitioners. According to prior research findings, students who found the course more relevant to their lives exhibited higher academic achievements in the course [43,44]. Thus, the findings of the current study imply that faculty members who teach undergraduate HRD courses need to develop contents more relevant to the job circumstances of students by providing detailed expositions to reflect the performance context of HRD practitioners using a suitable medium and diverse opportunities to participate in authentic tasks [45,46].

The study findings may raise an obvious critical issue regarding how occupational and professional programs in universities can continuously improve based on new information on performance gaps of novice incumbents fresh out of university. The efforts on the continuous improvement are crucial for sustainable economic growth because workers' competitiveness is a critical factor that affects their job security and allows them to retain decent work. Especially, this issue is directly related to Target 4.4 of the seven outcome targets for the implementation of SDG 4 that speaks to the need to "substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship" [47]. In this respect, this study proposes an idiosyncratic, systematic, and periodic formative evaluation process for the ongoing improvement of occupational and professional programs in universities.

There should be a focus on the typical external program review approach adopted in the United States, wherein a state agency selects a certain program for review and asks universities to implement self-studies concerning its quality and effectiveness. Afterward, the state agency organizes a review committee and let the committee determine the programs' statuses based on the self-studies [13,48]. For the formative evaluation of occupational and professional programs in universities, this approach might be varied by adding and modifying some procedures. The novel approach proposed in the current study is as follows. First, a national or state agency selects a certain occupational and professional program in universities (e.g., undergraduate HRD program) and multiple organizations where the graduates are employed. Next, the agency requires the organizations to collect the data necessary to identify the graduates' performance gaps (i.e., front-end analysis). Next, the agency asks a research institution trusted by the public to conduct learning needs assessment and then sends the results to the occupational and professional programs in universities. Based on the results of the learning needs assessment, the programs should develop a specific plan to improve their curricular in terms of content, sequence, and resources at the course and program levels and submit the report, including the improvement plan, to the agency within a stipulated period. The agency forms a committee, including practitioners and experts in the industry, to judge whether each improvement plan is appropriate. Finally, the committee conducts an interim check through a site visit to determine whether each program properly practices the improvement plan. This formative evaluation can be conducted every two or four years. This cycle might depend on the degree of changes in the knowledge and/or skills in the field. This study has its limitations that future research needs to cover. First, this study focused on only the developing professional capability among three domains of practice (i.e., developing professional capability, building personal capability, and impacting organizational capability) as presented by the ATD [18]. Accordingly, future research should expand to address the three domains of practice for HRD

practitioners, such that they can draw added comprehensive implications to enable the revision of undergraduate HRD courses. Second, the study addressed only purposes (i.e., capabilities) of the eight elements in the model of an academic plan proposed by Lattuca and Stark [13]. To establish a holistic academic plan for undergraduate HRD courses, future studies should include more elements into the curriculum such as learners, instructional processes, and instructional resources, as much as possible. Lastly, the target population was limited to HRD practitioners only in South Korean companies. As such, the findings may not be generalizable to those in other countries. Accordingly, future studies need to include data collected from multiple companies in various Asian and western countries to enhance the generalizability of the findings.

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## Appendix A. Questionnaire

### *Appendix A.1. Learning Science:*

Knowledge of the principles and applications of behavioral learning theory

Knowledge of the principles and applications of cognitive learning theory

Knowledge of the principles and applications of constructivist learning theory

### *Appendix A.2. Instructional Design:*

Knowledge of systematic instructional design models and processes

Knowledge and applications of needs assessment approaches and techniques

Knowledge and applications of formative and summative evaluation methods and processes

Knowledge and applications of instructional methods and techniques such as action learning, lecture, role playing, etc.

### *Appendix A.3. Training Deliver and Facilitation:*

Knowledge and applications of facilitation methods and techniques

Skill in delivering training using multiple delivery options such as online learning, mobile technology, multimedia, etc.

Skill in creating positive learning environments

### *Appendix A.4. Technology Application:*

Skill in identifying, selecting, and implementing appropriate learning technologies for training

Skill in utilizing e-learning software and learning (or performance) management systems

### *Appendix A.5. Knowledge Management:*

Knowledge of methods and techniques for disseminating and sharing organizational knowledge

Skill in designing and implementing knowledge management strategy

### *Appendix A.6. Career and Leadership Development:*

Knowledge of career development models, practices, and techniques

Skill in facilitating career development planning process by helping employees identify needs and career goals, preparing development plans, and conducting career planning sessions across career phases

Knowledge of leadership development models, practices, and techniques

Skill in designing, building, and evaluating leadership development experiences

#### Appendix A.7. Coaching:

Knowledge of organizational coaching models

Skill in recruiting, training, and paring coaches with employees and monitoring progress and accountability

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