

국가 인재통계 혁신 전략과 과제

- 일 시: 2009년 12월 4일 오후 1:30 ~ 5:30
- 장 소: 양재 엘타워 엘가든
- 주 최: 한국교육개발원·인재통계협력망

프로그램

13:30~14:00	등록	
14:00~14:20	개 회 사 인사말씀 : 김태완(한국교육개발원장)	사회 : 강성국(한국교육개발원)
14:20~14:50	기조발표 국가 인재통계의 혁신 전략 김창환/ 한국교육개발원	
14:50~15:00	휴식	
15:00~16:30	주제발표 ■ 창의적 인재육성을 위한 통계의 현황과 과제 김영철/ 한국교육정책연구원 ■ 글로벌 인재육성을 위한 통계의 현황과 과제 정기오/ 한국교원대학교 ■ 과학기술 인재육성을 위한 통계의 현황과 과제 이정재/ 한국과학기술기획평가원	
16:30~16:40	휴식	
16:40~17:30	종합토론 및 정리 ■ 김영애/ 한국교육학술정보원 ■ 박상현/ 한국고용정보원 ■ 양창준/ 한국정보통신산업협회 ■ 전기택/ 한국여성정책연구원	사회 : 김창환(한국교육개발원)

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국가 인재통계의 혁신 전략

김 창 환
(한국교육개발원)





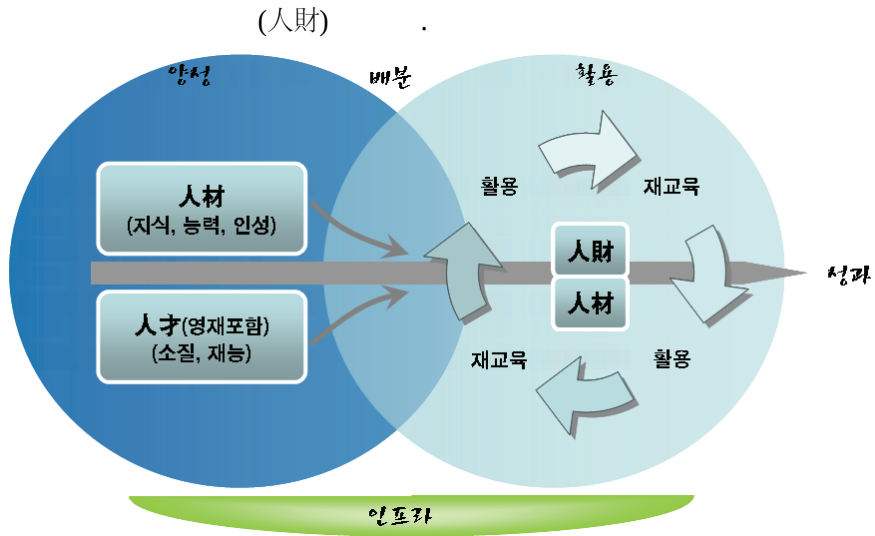
MB

1)

(, 2008b, 22)

(人材) . (人材)

(人才)



〔그림 1〕 인재 개념 모형

: (2008b), p. 37.

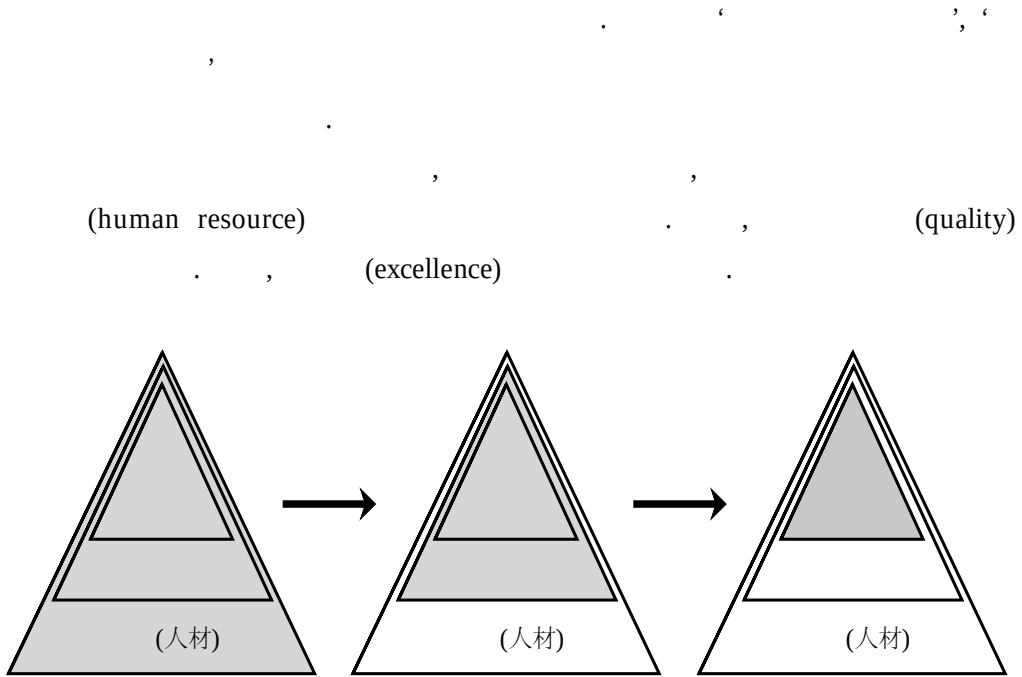
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(人材)

(人才)

(人財)

2)



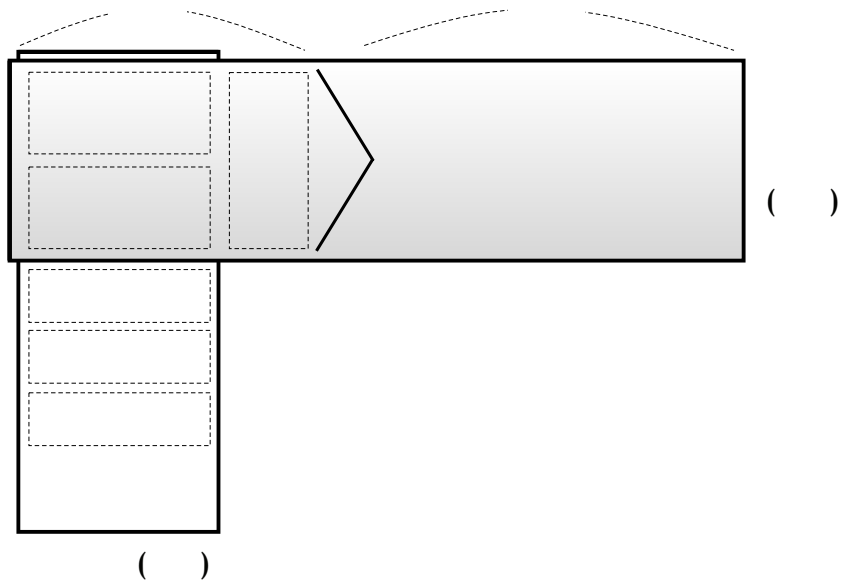
〔그림 2〕 인재의 속성

3) (flow) (stock)

(, 2008a).

(Data Dissemination)

()



〔그림 3〕 인재통계와 교육통계



2008).

〈표 1〉 영유아 단계의 인재양성 지표

·		GDP	F	
		1	F	
			F	
			F	
·			F	/
			F	/
·	1		F	/
			F	/
			F	
			S	
			S	
			S	
			F	/
			S	/
·			F	
			F	

〈표 2〉 아동 및 청소년단계 인재양성 지표

			S	
			S	
		()	S	/
		GDP	F	/
		OECD GDP (2003)	F	/
		1	F	/
		OECD 1 (2003)	F	/
		1	F	/
			F	/
		OECD (2002)	F	
			F	
			S	
		, ,	S	
		1	F	/
		1 (2004)	F	/
			S	/
		OECD (2004)	F	/
			F	
			F	

		1	S	
		1	S	
		·	S	/
		· ()	S	
		· 1	F	
			S	
		1	F	
			S	
		(2004)	F	
		(2004)	F	
		IMD	F	
		OECD (PISA)	F	
		PISA	F	
		IEA (TIMSS)	F	
		TIMSS (2003)	F	

〈표 3〉 고등교육 단계 인재양성 지표

			S	
			S	
		10	S	
			F	
			F	
			S	/
			S	/
			F	
			F	
			F	
		R&D	F	
			F	
			F	
			F	
			F	
			F	
			F	
			F	
			S	
			S	
		GDP	F	/
			F	
			F	
			S	
			S	
			S	
		SCI	F	/
		SCI	F	/
			F	
		IMD	F	
		IMD	F	

			S	
		10	S	
			S	
			S	
			S	
			S	
			S	
			S	
			S	
			S	
		The Times	F	
			F	
			S	
			S	

〈표 4〉 평생교육 단계에서의 인재양성 지표

			F	
			F	
			F	
			F	
			F	
			F	
		(, ,)	S	
		(, ,)	S	
			S	
			S	
			S	
		()	S	
		()	S	
		()	S	/
		()	S	
			F	
			S	
			F	
			F	/
		, - 1	F	
			F	
			F	/
			F	

(, 2008).

〈표 5〉 학교에서 노동시장으로 이행 지표

' → '			S	
			S	
			F	
			S	
			S	
			S	
			S	
			S	
			S	
			S	
			F	
			F	
			S	
			S	
			S	
			S	
			S	
			F	
			F	
			S	
			S	
			S	
			F	

〈표 6〉 노동시장 내에서의 이행 지표

->			F	
			F	
			F	
		(/)	S	
			S	
			S	
->			F	
		, ,	F	
			S	
->			F	
			S	
		, ,	S	
->			S	
			F	
			S	
		, ,	S	
		(2 , 4 ,)	S	
			S	

· ,

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, , ,

(skill)

(matching)

), (, 2008),

.

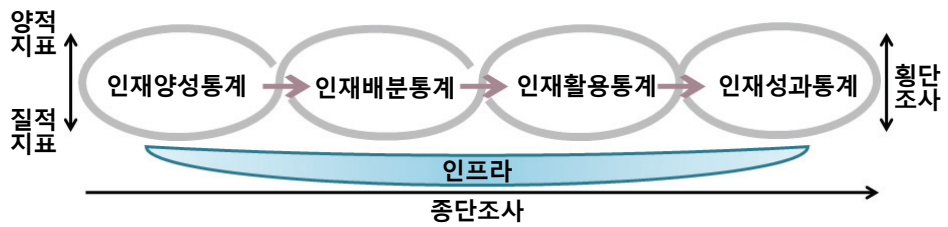
.

〈표 7〉 인재활용 지표

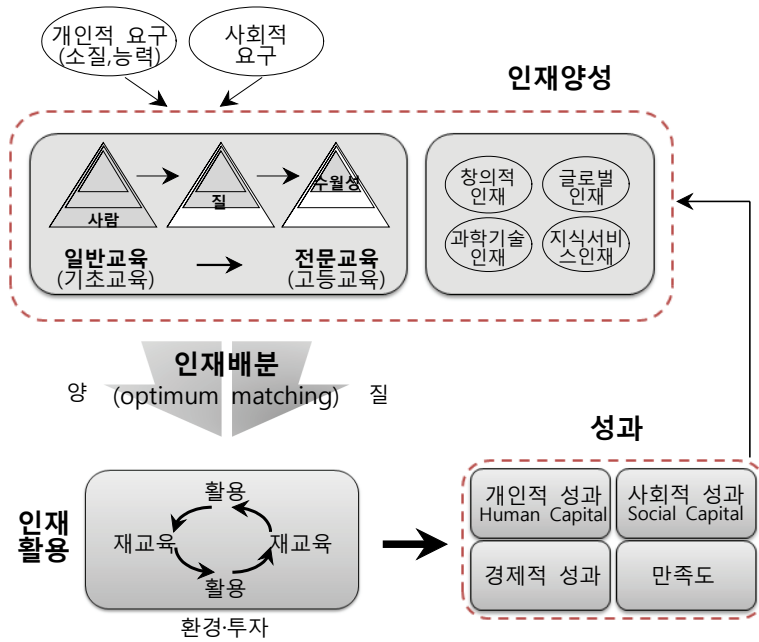
			S	
		, ,	S	
			S	
		, ,	S	
			F	
			F	
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			F	
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			F	
			F	
			F	
			F	
			F	

(, 2008).

〈표 8〉 인재성과 지표				
			F	
			F	/
			F	
			F	
		10	F	/
			F	
			F	
			F	
			F	
		()	F	
			F	
			F	
			F	
	()		S/F	
			F	
			F	/
			S/F	
			F	/
		1	F	/
			F	/
			S/F	
			F	
			F	
		SCI	F	/
		WEF	F	
		ODA	F	



〔그림 4〕 내용체제 모형



[그림 5] 인재통계내용체제 모형

(人材)

(matiching)

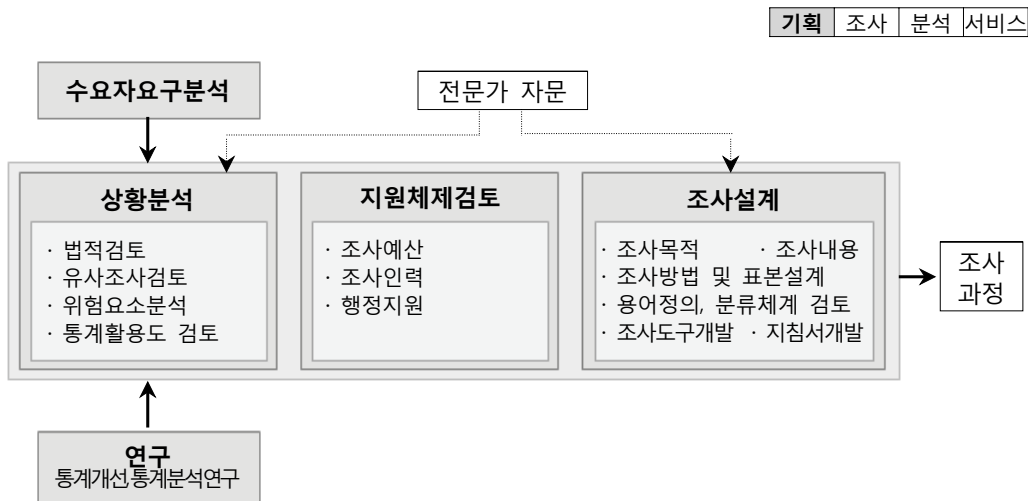
(Process

innovation)

(, 2006). (Statistics Planning), (Data Collection), (Data Analysis), (Data Dissemination) .

1)

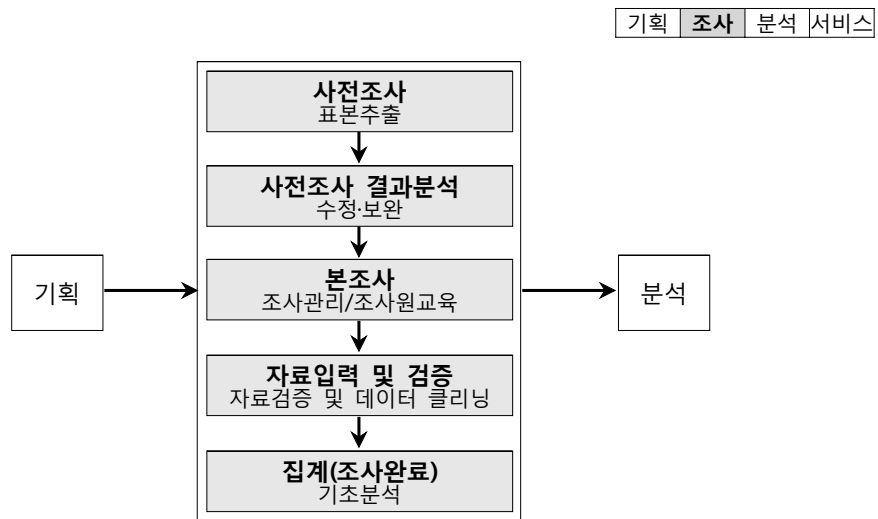
(UN, 1999).



[그림 6] 통계기획과정

2)

(Statistics Finland, 2007).



〔그림 7〕 인재통계 조사모형

3)

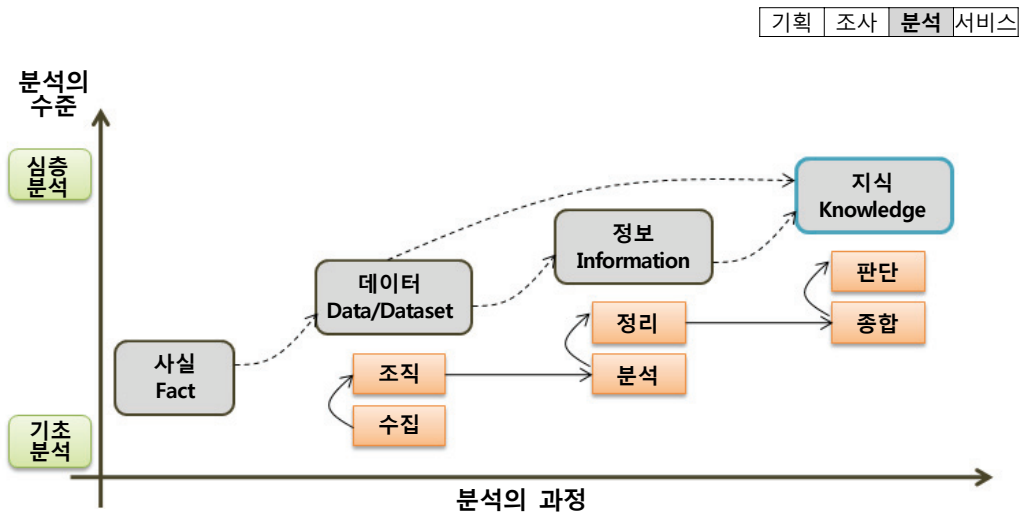
(data) (fact)

(information)

(context)

(knowledge)

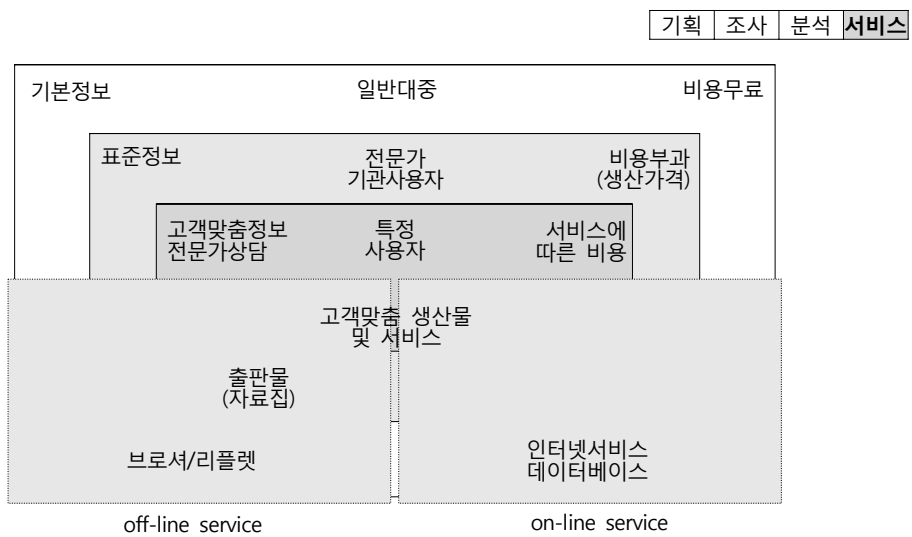
(Mandinach, 2008).



[그림 8] 인재통계 분석 모형

4)

[9]

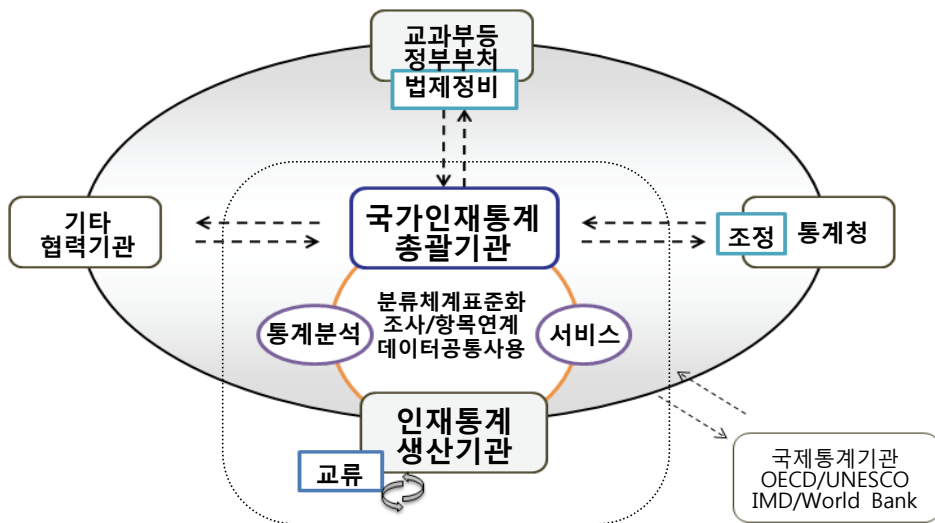


〔그림 9〕 인재통계 서비스 모형



(2005)

(2006)



[그림 11] 인재통계 관리·지원체제 모형

DB

DB

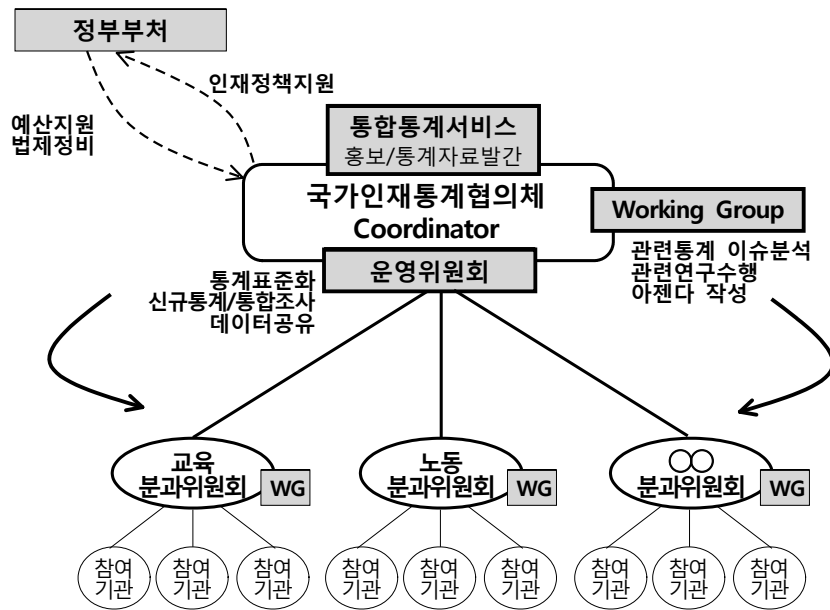
() ,

DB

(

DB,

working group



[그림 12] 협력연계모형



〈표 9〉 인적자원개발정책과 인재정책의 비교

	/	/
	.	
		.
	/	/
	.	()

(2008).

(, 2008b, 155)

(data-based research)

(evidence-based policy making)

30 국가 인재통계 혁신 전략과 과제

, 18.3%

55%,

16.7%,

17.5%,

7.5%

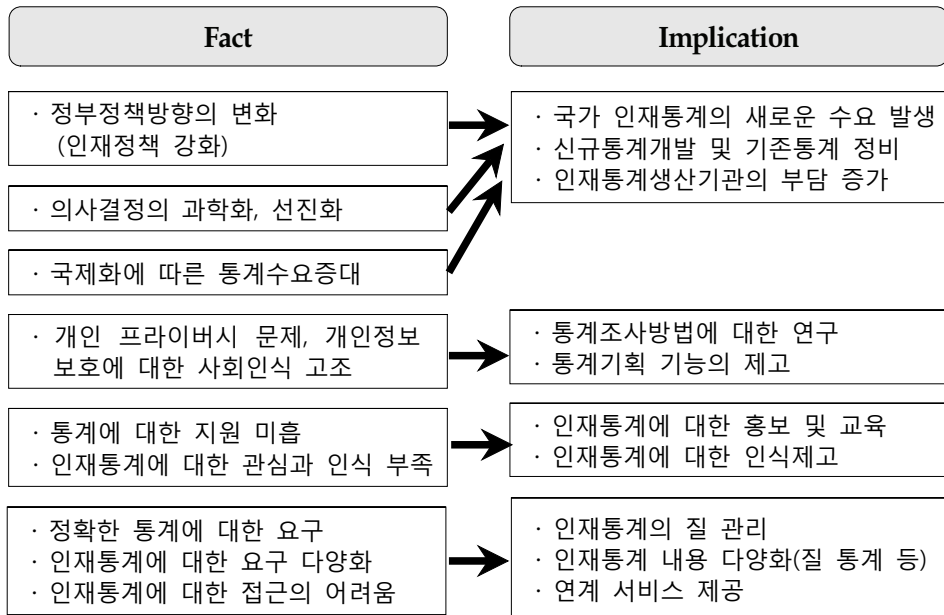
〈표 10〉 인재통계 수요자 요구분석 결과

	45(37.5)	70(58.3)	3(2.5)	2(1.7)	120
	1	1	1	1	
	24(20.0)	53(44.2)	18(15.0)	25(20.8)	120
	/				
	57(47.5)	33(27.5)	16(13.3)	14 (11.7)	120
	47(39.5)	48(40.3)	22(18.5)	2(1.7)	119
	4(3.3)	34(28.3)	71(59.2)	11(9.2)	120
	66(56.9)	20(17.2)	21(18.1)	9(7.8)	116

* 2008

(I)

1



(그림 13) 외부환경분석 결과

DB

IT

2008a).

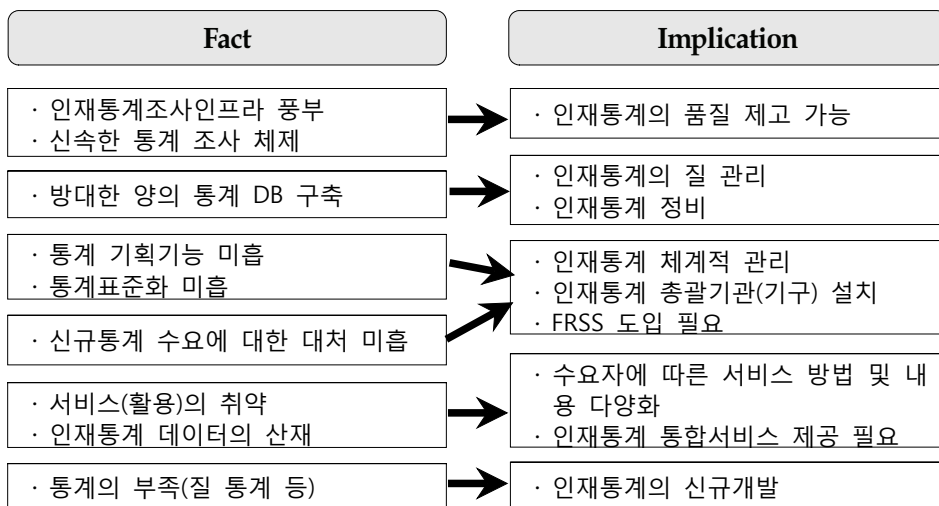
Service System)

MDSS(Micro Data

NCES

FRSS(Fast Response Survey System)

(, 2006a).



[그림 14] 내부역량분석 결과

(Strength), (Weakness), (Opportunity), (Threat)

(Weakness)

< IV-3>

Internal Focus

How well do we do? | **W**(weakness) what is

FRSS(Fast Response Survey System)



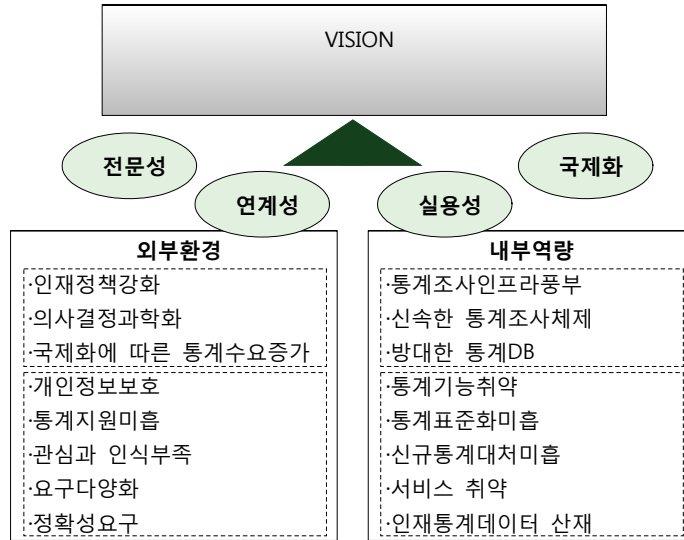
SWOT

,

1)

2008 16

(, 2008).



(그림 15) 인재통계 혁신 비전

2)

(goal)

〈표 13〉 전략목표후보에 대한 전문가 의견조사 결과

	(/7)	(%)	(%)
	<u>6.23</u>	<u>15.67</u>	7.43
	5.90	3.67	<u>12.64</u>
	5.83	5.00	8.92
FRSS	5.90	3.67	<u>12.64</u>
	5.87	<u>10.67</u>	<u>14.87</u>
	<u>6.43</u>	<u>23.67</u>	7.43
	5.80	7.00	<u>13.75</u>
	5.97	<u>10.33</u>	<u>10.04</u>
	<u>6.13</u>	6.67	8.55
	<u>6.07</u>	9.00	<u>11.52</u>

, 7 10

· , ,

, ,

. 10

10

23.67%

(15.67%),

(10.67%),

(10.33%)

(14.87%),

(13.75%),

(12.64%),

(11.52%)

.

· , , <

V-3> .

〈표 14〉 인재통계 혁신목표에 따른 전략목표

(3)	(4)	(10)
		FRSS

(Social Capital),

, FRSS(Fast Response Survey System) ,

ISO 9000 ,

1)

〈표 15〉 인재통계 생산기획 및 지원체제 구축을 위한 전략목표

1.	
2.	
3.	()

1 :

2)

()

〈표 16〉 인재정책 통계 강화를 위한 전략목표

4.	
5.	

4 :

mismatch) (skill

5 :

OECD

, OECD
(, UN)

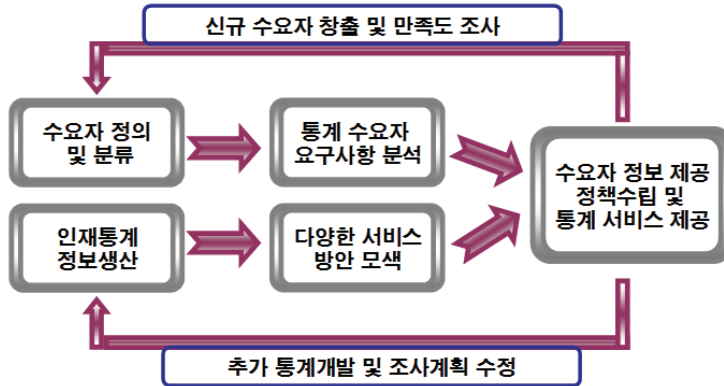
. OECD, IMD, WEF

,
 .
 . OECD, UNESCO
 ,
 ()
 .
 , 「
 」 ,
 ,
 .
 OECD, IMD, WEF
 ,
 ,
 .
 3)

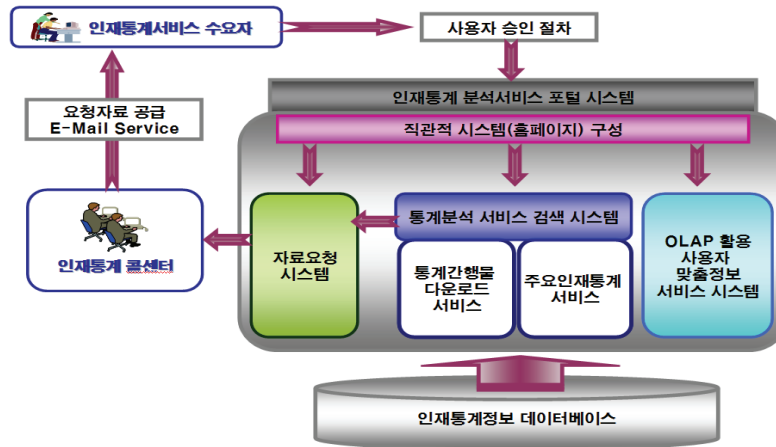
〈표 17〉 수요자 지향적 통계 서비스를 위한 전략목표

6.	
7. FRSS	KFRSS
8.	
	One-stop

6 :



[그림 17] 수요자 유형별 맞춤형 서비스 상세화 방안
프로세스



[그림 18] One-stop 통계 분석서비스 시스템 개념도

one-stop

. One-Stop

. One-Stop

(, OLAP (On-Line analytical processing))

,

.

RSS(Really Simple Syndication)

.

4)

.

.

〈표 18〉 인재통계 품질 고도화를 위한 전략목표

9.	(Quality Standard)
10.	ISO

， ISO

(Quality Standard)

NCES (Statistical Standard)

(ESS, European Statistical Standard)

ISO 9000 . ISO 9000(International Organization for Standardization 9000)

ISO 1987 QM/QA ,

3

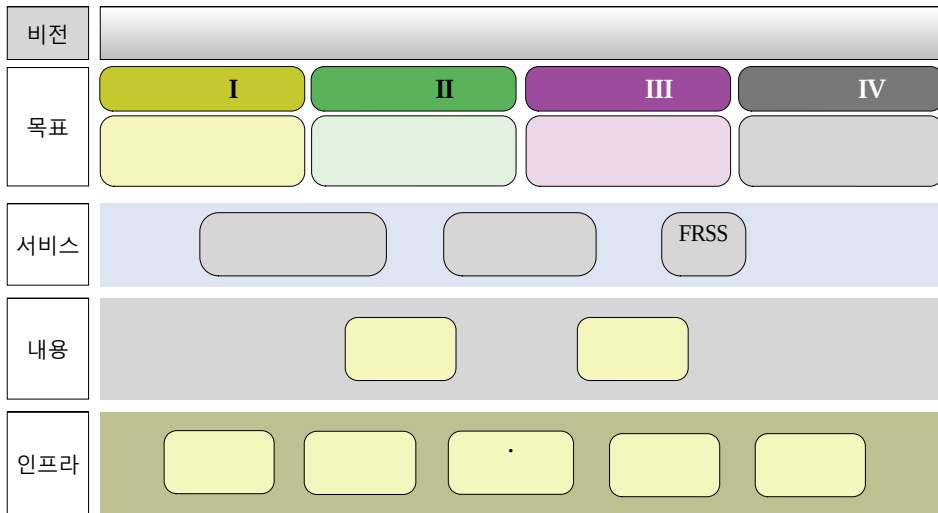
ISO 9000

ISO 9000 , ISO

'ISO 9000 '

'ISO 9000 ' , ISO 9000

, ISO 9000 , ISO 9000



〔그림 19〕 인재통계 혁신전략 체제



OECD . . . 2000 . . . , . . . PISA , OECD . . . , . . . , OECD PISA . . . OECD 21 . . . , . . . OECD . . . OECD (EAG, Education at a Glance) . . . , . . . EAG (PISA), (AHELO), (PIAAC) . . . EAG PISA, AHELO, PIAAC . . . , . . . OECD , . . . EAG, PISA . . . OECD . . . OECD . . . , . . . OECD . . .

(2008).
(2009).
(2009).
(2006). 2006-
-20.
(2009). 2009
(2006). (CIS) BSC
(2007). 1
CR2007-66. :
(2006). BSC
(1999).
(2006). BSC
(2007). ()
(2002).
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(2007). 2007
(2008a). (I):
(2008b).
(2001).
(2005).
(2009).
. 2009 6
(2006).
. 16(4). 117~138.
(2005). (HRD Index)

- (2006a).
- (2008).
- (2004). (Ⅲ).
- (2008).
- (2007).
- (2004).
- (2008).
- (2008).
- (2006).
- (2004). (HRD Index).
- (2002).
- (2006). I, II, III.
- (2007).
- (2008). (). 2008. 7. 25.
- (2008).
- (2007). - 2009.
- (2002).
- (2007).
- (2008).
- (2008).
- (2009).
- (2006).
- (2007). 2007
- (2008).
- (2006). BSC
- (2007).
- Altshuler, A. A. & Behn, R. D.(1997). Innovation in government: challenges, opportunities and dilemmas. Brookings Institution Press.

- Beimer, Paul and Lyberg Lars(2003). Introduction to survey quality - business & economics - Wiley - Hardback.
- Clar, Günter, Doré, Julia & Mohr, Hans(1997). Humankapital und wissen: Grundlagen einer nachhaltigen. Springer.
- Damanpour, F.(1991). Organizational innovation: a meta-analysis of effects of determinants and moderators. Academy of Management Journal. 34(3). 555~590.
- Damanpour, F. & Evan W. M.(1984). Organizational innovation and performance: the problem of organizational lag. Administrative Science Quarterly, 29. 392-409.
- Eurostat(2000). Assessment of the Quality in Statistics.
- Eurostat(2006). Classification of learning activities - Manual. European Commission
- Federal Statistical Office(2009, German). Strategy and Programme Plan.
- Frederickson, H. G. & Johnston, J. M.(1999). Public management reform and innovation. The University of Alabama Press.
- Götz, Klaus(2000). Human resource development. Rainer Hampp Verlag.
- Guilford, J. P. (1950). "Creativity," American Psychologist, 5, 444-454.
- Jackson, N., Oliver, M., Shaw, M., & Wisdom, J.(2006). Developing creativity in higher education: the imaginative curriculum. London: Routledge.
- Kaplan, R. S. & Norton, D. P.(1993). Putting the balanced scorecard to work. Harvard Business Review, September October. 134~142.
- Lassnigg, L. 2005. Lifelong learning, school to work and labour market transitions. TLM.NET 2005 Working Papers No. 2005-06. Amsterdam: SISWO/Social Policy Research.
- Ludwig, A. M. (1995). The price of greatness. N. Y.: The guilford Press.
- Mandinach, Ellen B./ Honey, Margaret(ed.)(2008). Data-driven school improvement: Linking Data and Learning. New York.
- Mulgan, G./ Albury, D.(2003). Innovation in the public sector. Strategy Unit, Cabinet Office, London-UK.
- NCES(2000). International education indicators: A time series perspective, 1985-1995.
- NCES(2003). NCES statistical standards.
- NCES(2005). From guide to education indicators.
- Niven, P. R(2002). Balanced scorecard step by step: maximizing performance and

- maintaining results. N.Y.: John Wiley & Sons, Inc.
- OECD(1998). Human capital investment: An international comparison. Paris.
- OECD(1999). Classifying educational programmes manual for ISCED-97
Implementation in OECD countries
- OECD(2004). OECD Handbook for internationally comparative education statistics.
- OECD(2005). Oslo Manuel: Guideline for collecting and interpreting innovation data.
- OECD(2008). Education at a glance 2008.
- OECD(2008). Trends shaping education. OECD publications.
- OECD. 2008a. Jobs for youth: Netherlands. Paris: OECD.
- OECD. 2008b. Jobs for youth: Canada. Paris: OECD.
- OECD. 2008c. Jobs for youth: New Zealand. Paris: OECD.
- Official Statistics Federal Republic of German(2005). Quality standards in German official statistics.
- Pfeiffer, Friedhelm & Falk, Martin(1999). Der faktor humankapital in der volkswirtschaft. Baden-Baden: Nomos.
- Ritter, Joachim(Hrsg.)(1984). Historisches wörterbuch der philosophie. Basel. 45-50.
- Rogers, E. M.(1995). Diffusion of innovation. N.Y.: Free Press.
- Schmid, G. 1998. Transitional labour markets: A New European Employment Strategy. Discussion Paper FS I 98-206. Berlin : WZB.
- Statistics Canada(1999). Managing data quality in a statistical agency.
- Statistics Finland(2007). Quality guidelines for official statistics.
- Stibbard, Peter. 1999. Labour market dynamics: A global survey of statistical activity. EMPLOYMENT AND TRAINING PAPERS 38. Geneva:ILO.
(<http://www.ilo.org/public/english/employment/strat/publ/etp38.htm>).
- UNESCO(1992). Informal meeting of experts on human resources development indicators and social report. UNESCO.
- UNESCO(2006). International standard classification of education: ISCED 1997.Unesco Institute for statistics
- UN(1999). Information systems architecture for national and international statistical offices.
- Van de Ven(1986). Central problems in the management innovation. Management Science. 32(5). 590~607.

창의적 인재통계의 발전과제

김영철
(한국교육정책연구원)

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 1971 Oxford English Dictionary , 1988
 Webster's Dictionary “ ;
 (creative ability; artistic or intellectual inventiveness)”
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 Piirto(2004)
 Guilford 1950 (American Psychological Association)
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 Psychology “Creativity and Culture”
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 1950 1970
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 1980 . 1990
 (Craft, 2006).⁴⁾
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 (National Advisory Committees on Creative
 and Cultural Education: NACCCE, 1999)
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3) Oxford Study Thesaurus(1991) 'creative' artistic, clever, fecund, fertile, imaginative, inspired, inventive, original, positive, productive, resourceful, talented .

4) , (creative teaching) , ICT .

.⁵⁾ , (sectoral) , , ,
 (élite)
 (democratic)

. NACCCE(1999)

‘ ()
 (imaginative activity fashioned so as to produce outcomes that are both original
 and of value)’

(imaginative activity), (original outcomes),
 (value of outcomes) 3 .⁶⁾

5) (2003)

6)

Osborn(1953, 1963)

Guilford(1959)

Eysenck(1972)

(1985)

(productive thinking)

Taylor(1988)

7)

(creativity)

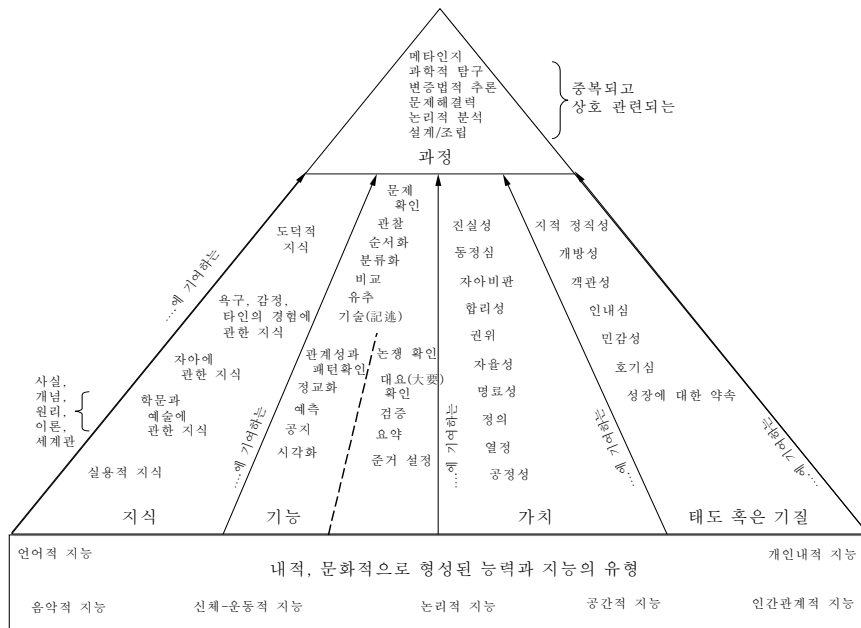
Klenz(1987) , [1] , .

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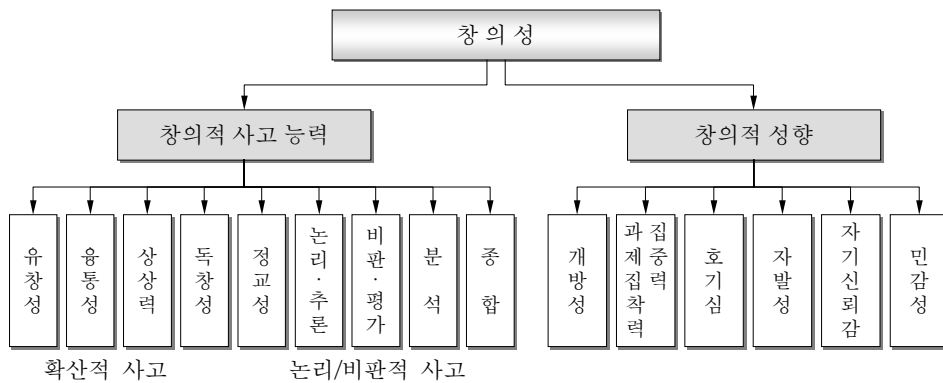
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〔그림 1〕 창의성의 핵심 요소

68 국가 인재통계 혁신 전략과 과제

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 (2005)
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: (2005). Creative Thinker . :

〔그림 2〕 창의성의 구성 요소

〈표 1〉 창의적 사고와 창의적 성향

			(category)
			(category)

: (2005). Creative Thinker . :

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(intuition)

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(problem solving) . NACCCE(1999) ,

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Jackson, Shaw, Wisdom(2006) ,

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Ⅲ. 창의적 인재 육성 과제

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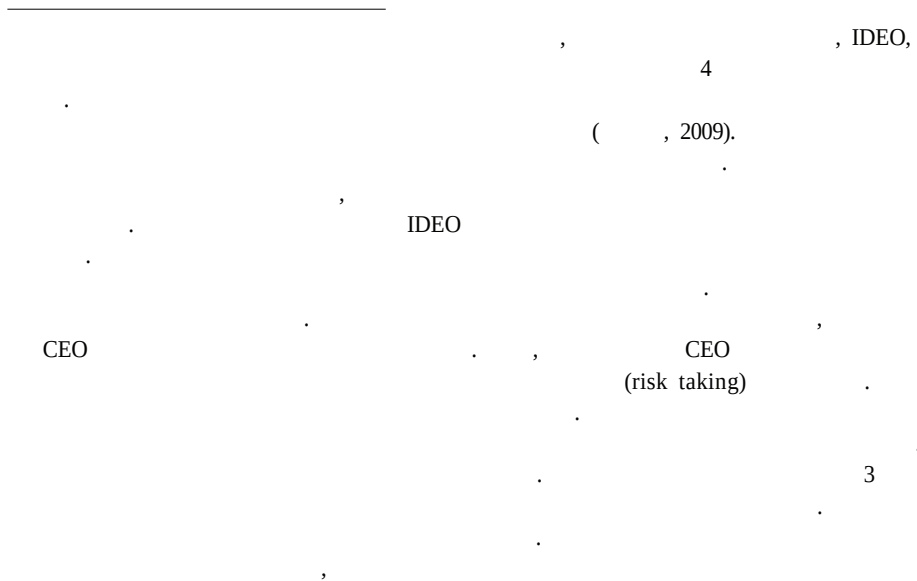
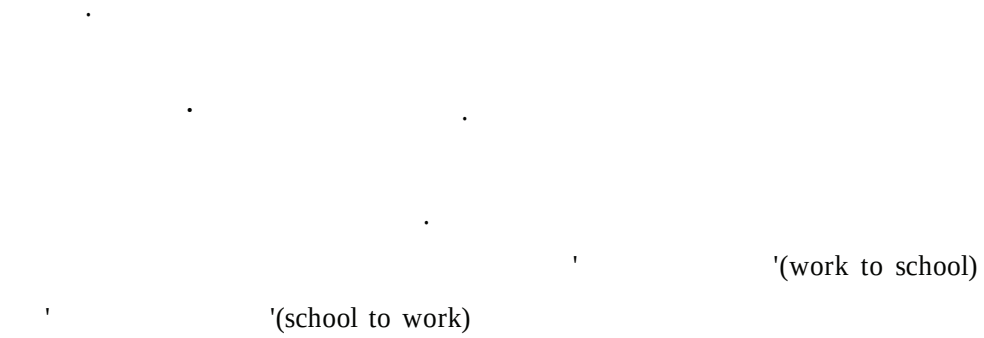
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I. 창의적 인재 통계 현황

86 국가 인재통계 혁신 전략과 과제

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II. 창의적 인재 통계의 발전과제

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Craft, A.(2000). *Creativity across the primary curriculum: Framing and developing practice*. London: Routledge.

_____(2006). *Creativity in schools: Tensions and dilemmas*. London: Routledge.

Jackson, N., Oliver, M., Shaw, M., & Wisdom, J.(2006). *Developing creativity in Higher Education: The imaginative curriculum*. London: Routledge.

Klenz, S.(1987). *Creative and Critical Thinking*. Prince Albert, Sask.: Saskatchewan Education.

NACCCE(National Advisory Committee on Creative and Cultural Education)(1999). *All our futures: Creativity, culture and education*.

Osborn, A.(1963). *Applied Imagination*. NY: Scribner's.

Piirto, J.(2004). *Understanding creativity*. Scottsdale, AZ: Great Potential Press.

Shallcross, D. J.(1981). *Teaching creative behavior: How to teach creativity to children of all ages*. Englewood Cliffs, NJ: Prentice-Hall.

Taylor, C. W.(1988). Various approaches and definitions of creativity. In R. J. Sternberg (ed.). *The Nature of Creativity*. New York: Cambridge University Press.

Taylor, I. A.(1959). The nature of the creative process. In P. Smith(Ed.), *Creativity*. New York: Hastings.

Torrance, E. P.(1995). *Why fly?*. Norwood, N. J.: Ablex Publishing Corporation.

Wallas, G.(1926). *The Art of Thought*. New York: Harcourt Brace.

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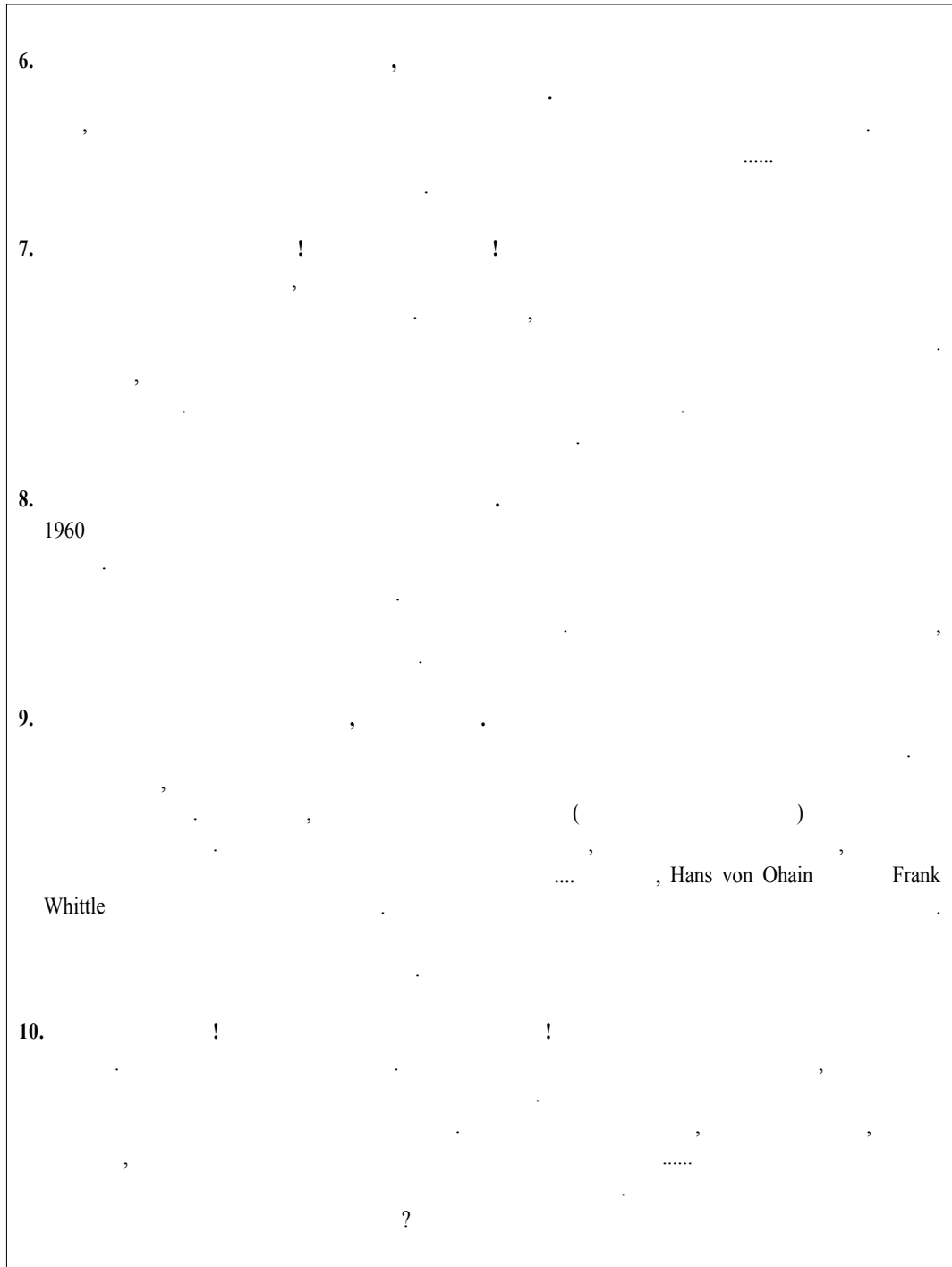
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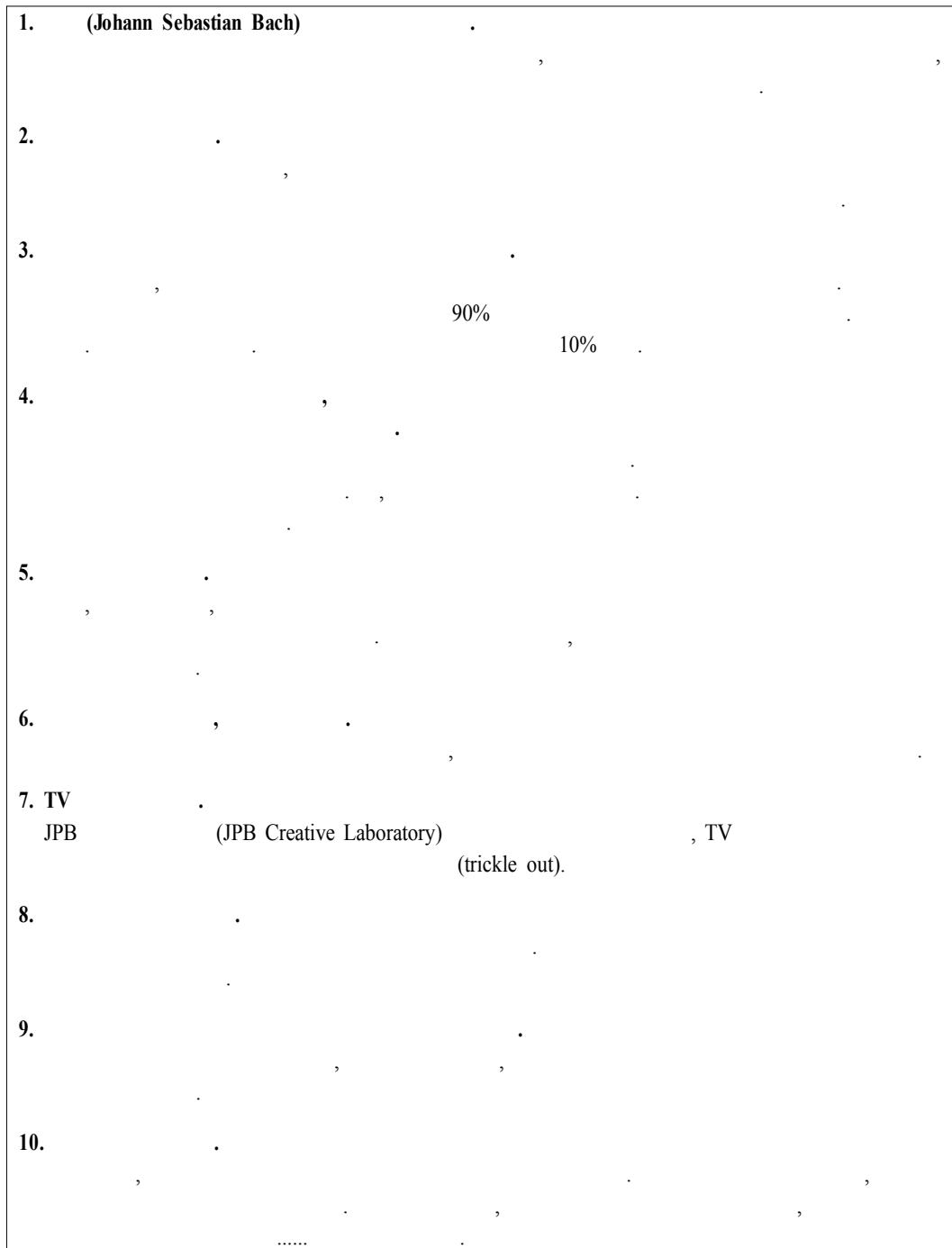
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: Baumgartner, J.(2005). 10 Creative Myths.
http://www.jpbc.com/creative/article_creative_myths.php.



: Baumgartner, J.(2005). 10 Steps for Boosting Creativity.

<http://www.jpb.com/creative/creative.php>.

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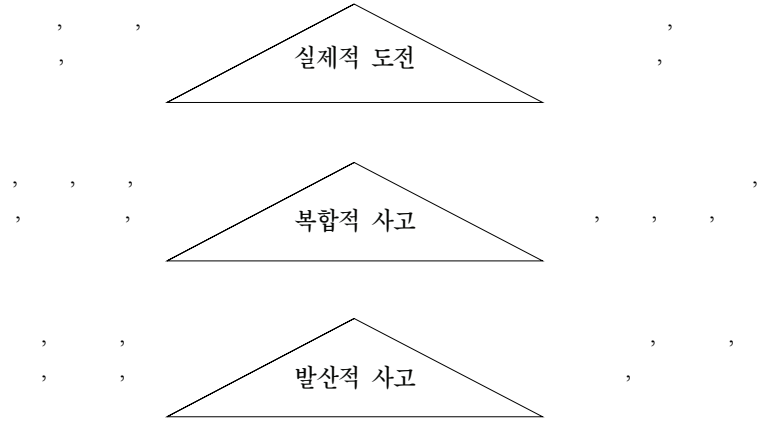
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[부록 그림-1] 창의적인 학습 모형

인지적인 면

정의적인 면



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글로벌 인재육성을 위한 통계의 현황과 과제

정 기 오
(한국교원대학교)



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〈표 1〉 글로벌 역량의 개인적 요소

영역	세부 영역	의미
외국어 능력	영어 사용 능력	일상과 업무관련 용어를 이해하고 상호 교류할 수 있는 능력
	현지어 사용 능력	일상과 업무관련 용어를 이해하고 상호 교류할 수 있는 능력
이문화 적응 능력	글로벌 비즈니스 마인드 능력	글로벌 시대에 부합한 기본소양, 상식과 태너
	이문화 이해 능력	지역의 정치, 경제, 사회, 문화, 역사, 종교 등을 이해할 수 있는 능력
	파견지역(현지) 적응 능력	일상생활, 음식, 쇼핑, 건강, 교육, 교통 등 현지사회 생활에 적응할 수 있는 능력
리더십	자기 주도성	최선의 목표를 달성하기 위해 직접적으로, 적극적으로 긍정적으로 추구하는 능력
	인성	건강, 정확성, 독창성, 책임감, 인내, 사회적 상호작용을 유지하는 능력
	교섭, 갈등 관리 능력	수익성을 확보하기 위해 가장 적합한 합의를 중재하고 찾아내는 능력
	체계적인 조직화 능력	조화로운 작업체계를 구축하고 조직의 정체성을 높이는 능력
	동기부여 능력	지속적으로 목표를 성취하기 위해 구성원을 격려하는 능력
	미래예측, 전략수립 능력	변화를 예측하고 위기를 최소화하며 기회를 극대화하는 능력
	목표 관리 능력	명확한 목표를 수립하고 기준을 평가하며 목표 달성을 위한 자원과 비용을 활용하는 능력
		가장 적합한 해결책을 발견하기 위해 문제를 인식하고 분석하는



1. 글로벌 인재 개념의 정책적 배경

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(2008)

〈표 1〉 수월성 개념에 대한 대표적인 정의들

종류/ 연구자	정의
어원적 의미	· <i>excelling</i> (영어): ~보다 뛰어난 · <i>arete</i> (헬라어): 개인이 재능을 충분히 개발하여 갖고 있는 장점 혹은 덕성 (virtue)
가드너 (J. Gardner, 1977)	· 개인이 가지고 있는 다양하고 풍부한 잠재능력으로서의 수월성 · 사회전체에 활력을 주고 인류의 진보에 기여하는 수월성
김경자(2002)	· 개인적 수월성: 학습자 개인의 적성과 능력의 뛰어난 발휘 · 교과적 수월성: 교과의 최고 수준에 도달한 상태 · 사회적 수월성: 교육조건의 평등화를 통해 모든 사람이 뛰어난 수준에 도달하는 상태
프라카쉬와 웨익스 (Prakash and Waks, 1985)	· 숙련으로서의 수월성 · 학문적 정통으로서의 수월성 · 자아실현으로서의 수월성 · 사회적 책임으로서의 수월성

(core competence)
 . 1960

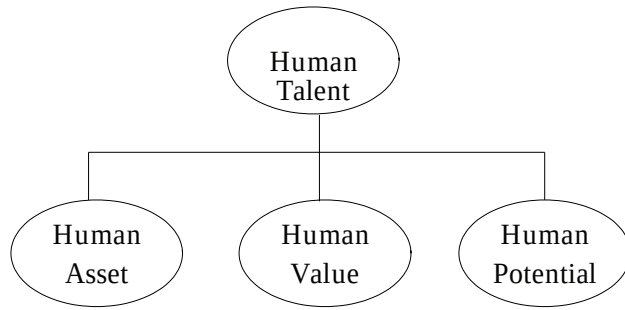
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☐ (Human Talent)

○ Human Talent

○ , . . . ,

○ Talent: Excellent

○ Human Talent(Best People)

- Human Asset(Excellent People) :

- Human Value(Right People) :

- Human Potential(Future People) :

○ Talent

- : , / : / Martin Luther :

○ Mickles, E. (2001) 'The War of Talent'

- Mickles, E. 'The War of Talent' .

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○ Harvard Business Review

Talent

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- Cohen, J. M., Khurana, Reeves, L.(2005). Growing talent as if your business depended on it. Harvard Business Review, 83(10), pp.62-70.
- Cappelli, P.(2008). Talent management for the twenty-first century. Harvard Business Review, 86(3), pp.74-81.
- Martin, R. L. & Moldoveanu, M. C.(2003). Capital versus talent. Harvard Business Review, 81(7), pp.36-41.
- Ready, D. A. & Conger, J. A.(2007). Make your company a talent factory. Harvard Business Review, 85(6), pp.68-77.

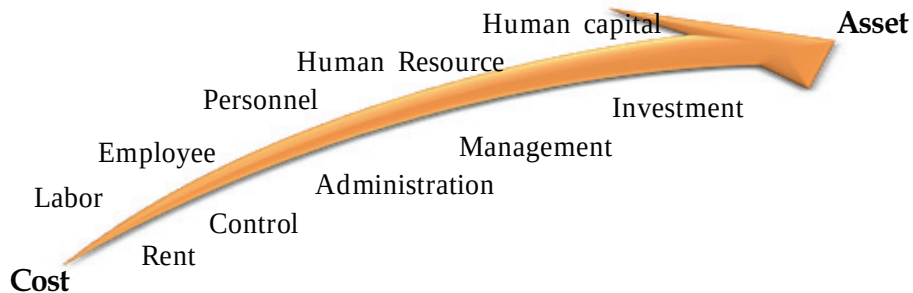
- Tom Peters(2007) Excellence
- Talent Excellence : Talent
- Talent Excellence Creativity Enthusiasm

☐ **Human Asset : Excellent People**

- Human Capital , , ,
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○ (OPM) (1999)

- . → , ,
- Human capital



- Harbison & Myers(1964)
 - "Education, manpower and economic growth: strategies of HRD"
 - In economic term, the purpose of national approach, accumulation of human capital and development of economy
- Wang & Swanson(2008)
 - "The idea of national HRD: An analysis based on economics and theory development methodology"
 - HRD Economics
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☐ Human Value : Right People

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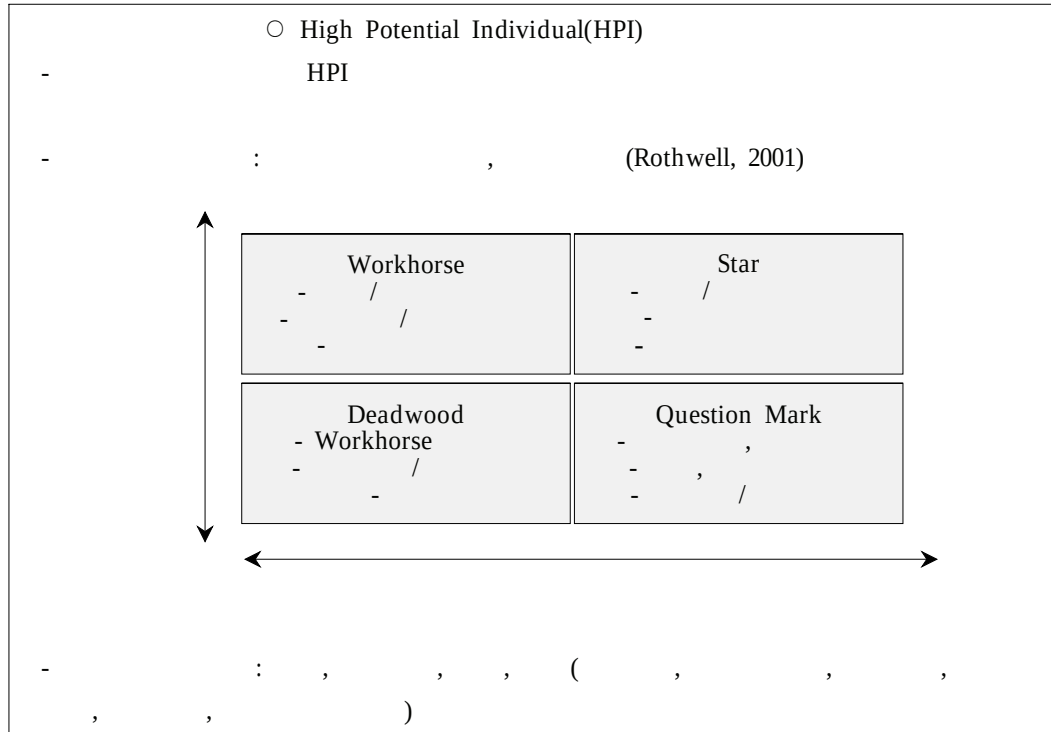
- Mickles, E(2001) "The War of Talent"
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- Harbison & Myers(1964)
- "Education, manpower and economic growth: strategic of HRD"
- In social and cultural points, fuller and richer life, less bound by tradition
- in political terms, participation in political process, citizen in a democracy

☐ Human Potential : Future People

- Leader

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○ Human Competency Human Creativity

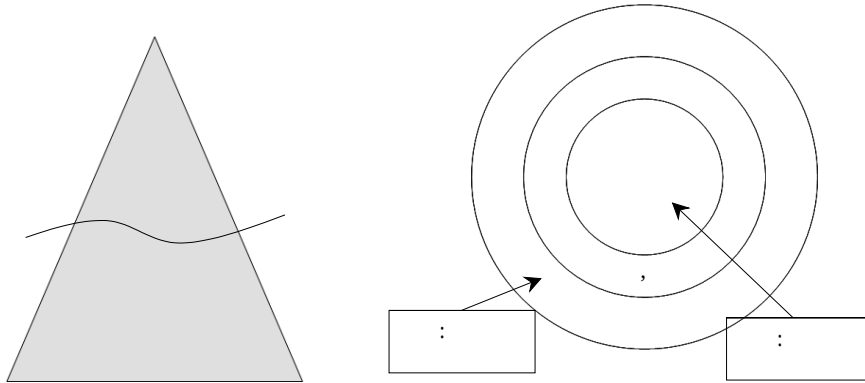
- (competency)

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- (creativity), (professionality),

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- : , , , , , (Spencer & Spencer, 1993)



- **Human Capital**: agricultural age(farmers), industrial age(factory workers), information age(knowledge workers), conceptual age(creators & empathizers)
- Human creativity is the ultimate economic resource.

(human resource)

ASTD(American Society for Training &

D Development)

HRD

(education nationale) (nation building)
 (education nationale)
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 (development economic) - -
 (盲目)

2. 정책과 데이터, 정책통계자료의 형태, 글로벌 인재통계

< -statistics>

< >

(state) < >

(,)

17) Wang, G. J. & Swanson, R. A. (2008) “The idea or national human resource development: An analysis hascd on economics and theory development methodology. Human Resource Development Review. 7(1) p.79-106.”

NHRD

NHRD

(strategic) .

:

① (全數調査) - ,

② -

③ ()

④

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fact

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Talant(Asset, Value, Potential)

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① -< -action >

② < >

③
< -authenticity>

:

○ : _____

- talent-asset-value-potential

- (talent) (asset) (value) (potential)

○ < - > complex (fact-) : _____

- action

(operational definition)

(ex.) (operational definition)

-

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non-operational

○ < + + > : Authenticity

- Talent, value, potential

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-

1. Emotivism과 이해관계의 주체

20

18)

: ①

②

18) Mark Boyle and Suzanne Motherwell(2007). ATTRACTING AND RETAINING TALENT: LESSONS FOR SCOTTISH POLICY MAKERS FROM THE EXPERIENCES OF SCOTTISH EXPATRIATES in DUBLIN. www.scotecon.net

2. 행동주의와 조작적 정의 문제

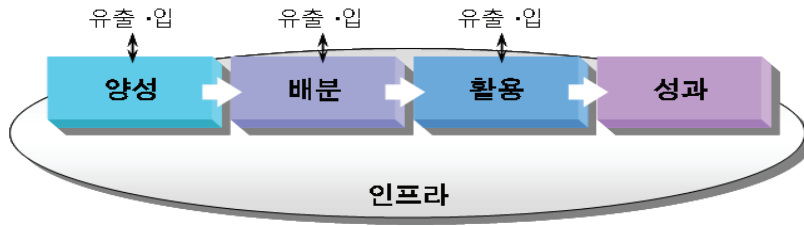
Human Value, Human Potential

3. 조사의 수준과 조사단위의 문제

4. flow와 stock

“

”(: 2008b, 23)



[그림 1] 인재통계의 내용 체제¹⁹⁾

① < > ②

< > ①

②

4

① (全數調査) - , stock

flow ②

③ () ④

19) (2009) “

” KEDI



1. 경영학의 글로벌 인재 개념과 글로벌 기업의 관심

글로벌 인재 개념은 경영학의 관점에서 인재의 범주를 확장하고, 인재의 특성을 재정의하는 데 초점을 맞추고 있다. 이는 기업의 경쟁력을 높이기 위한 전략적 접근으로, 인재의 다양성을 중시하고, 인재의 역량을 강화하는 데 중점을 둔다. 또한, 인재의 글로벌 역량을 강조하고, 인재의 글로벌 네트워크를 구축하는 데 중점을 둔다.

HR

20)

“ ” “candidate”

5

?

(人物),

Merrill Lynch

Sony

‘Digital Dream Kid’

‘Sony’

5

GE

4E(Energy, Energize, Edge, Execution)

(Value Chain)

HR

(Career)

Case

2. 국제기구와 정부의 움직임

ILSS(International Life

Skill Survey)

HSMP(Highly Skilled Migrant Programme)

〈HSMP 발급자 직업별 분류〉 21)

2003

. 21 1990

1970 30

2

30 2000

21)

(2006)

. p.24

“ ” 22)

2004 < (“ ”)>

21

1 ()

22)

2002

CEO
2008

“ ” “ ”

이공계특별법 정책사업 근거조문의 내용

	13
	14
	15
	16
8	17 . .
9	18 .
10 . .	19
11 .	20
12 .	21)
	22
	23
	24

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3 3)

1. . (全週期的)

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4. . . .

5.

6. . .

7.

(1. 2.

3.)

2006-2010

< 2005 7

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- 4 . ()
- 5 . ()

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- “ ” :

- “ ” :

(2 , 5 , 7 , 15 , 16 , 20
2 , 6 , 14 , 15 , 22

OECD “

(HRST)” (Canberra Manual), UNESCO(1984) “ ” ,
OECD “ (R&D) ” (Frascati Manual)

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OECD (Canberra Manual-1995) (ISCED
) (ISCO) (Human Resources
in Science and Technology)

a)

b)

a)

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OECD

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15,000

2009 9 344,774 40

220,610 150 1

80%

200 300

1300

2020

1500

17

2007

-kistep



2009 7 10 2
 2002 2007 5 74%
 2950 5160 1300
 40 3700 2/3

	- : 2002 2959 2007 5160 . 74% - , 41% , 44% R&D 68% - . 25% . (2003 11.4%) , 4/5 . 77.5% 69.2% ‘ , - ‘2020 ,
	-2007 40 3700 , 2/3 . - 37.9 , 35 37.9% . 35 62.1% . - 2800 ,
	-2005 1437 . 33% . -2005 ~2007 , 4 49.2% 45.3% 51.2% 47.4% . 50% - 40.4% , 35 43.1% . 35 (38.6%)
	-48.7% . 10% , 83% . , 30.3%. 27%. - : (51.8%), (41.4%), (33.5%)
, ,	- 47.3 > 40 2003 2 - 56.7 , 2003 8 ()

	- 55.2 , 80 8.1%(26.4%, 21.7%) -56% ‘ , ‘ ,
	-54.5% , 1 2.91 SCI / EI 1 0.62 . - 3 88.4% 72.3% - SCI / EI 74.2% 46.8%

. : ILSS

23) ILSS

OECD

Robert Sternberg

. 15

OECD PISA

Global Skill

. ILSS

6

OECD

3. 근본적 혼란-국제비교교육통계와 글로벌인재통계의 혼동

OECD (Education At a Glance: EAG)
OECD EAG

23) 1998

practical cognition

National Education System
· OECD EAG, PISA
Global Talent ,
National .

1. 글로벌 시대의 정부역할과 통계 기능

글로벌 시대의 정부역할과 통계 기능

글로벌 시대의 정부역할과 통계 기능

(industrial economy) <

> 21 stock data ① flow

②③④

2. 인적자원 인적자산 인적자본의 구분

(人材) “材”

2 1

：“ ”

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< (人材)>

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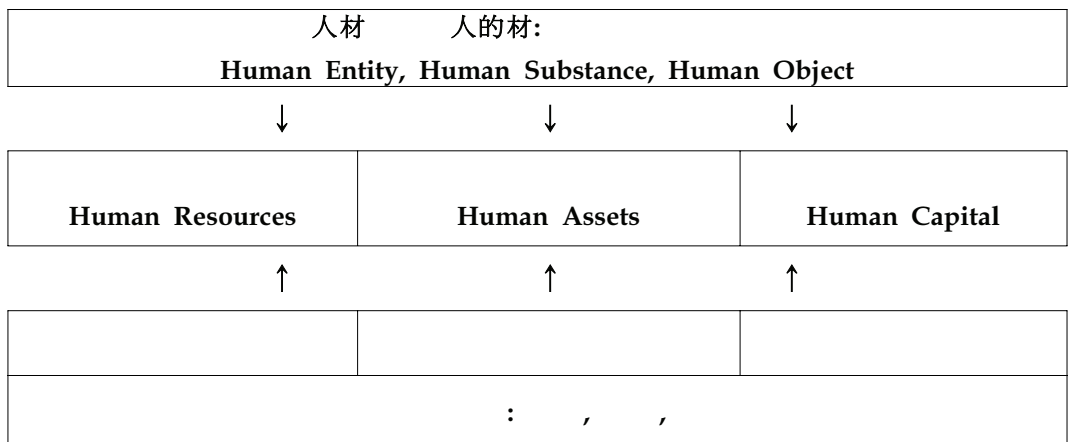
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☐ Human Entity

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- - - :
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- , - , -

☐

- , , → (“ ”)
- : , , () < >
- ex. ,
- , , ()
- resource assets (ex.)

☐

- 1: , (property, asset)
- 2: ,
- ex. , , etc
- : -Common's Tragedy
-
- :
- :

☐

- :
- - _____ ,
- ,
- : →
- Marx , - ,
- ① vs. → vs.
- ② : / → (, ,), →

- < > - authenticity
- → ()
- → (→)
- () → (programmed activities)
- - - post-modern

3. 글로벌 인적자원 통계: 사람에 체화되는 인적자원

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4. 글로벌 인적자산 통계

_____ : _____
 ()
 < > (ready to
 use) < >(assets) . ,
 (轉化) < (human assets)>
 .25)

 25) < >(human assets)

26)

(common's tragedy)

(轉化)

26)

(國有)

< >

< >

(一身專屬的)

(轉化)

(substantial human assets)

(relational human assets)

(trade mark)

4

$\frac{1}{2}$			
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

	Human Properties	-			
			(HRD)	(HRM)	(HRU)
	- -		-		
	(ex.)			()	
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			,	/	
				/	
	trademarks			/	
				/	
	(service trademark)				

A sample of recently published patents statistics²⁷⁾

Australia (1996)

- Foreign patent applications, date of application, by inventor.
- USPTO grants, date of grant, by inventor.

European Commission (1997)

- EPO applications, date of priority, by inventor, including non-extended Euro-PCT since 1989.
- EPO applications, date of publication, by inventor, including non-extended Euro-PCT.
- USPTO grants, date of priority, estimates since 1992.
- USPTO grants, date of grant.
- Triad applications (patents which, in addition to the country of origin, are filed in at least two foreign markets in two different triad regions).

Germany, BMBF (1998)

- Triad applications (patents which, in addition to the country of origin, are filed in at least two foreign markets in different triad regions), figure I/15.

France, OST (1998)

- EPO applications, date of application, by inventor, including non-extended Euro-PCT for the last few years.
- USPTO grants, date of grant, by inventor.

Japan, STA (1996)

- JPO applications, and grant.
- Domestic (resident) patent applications (including PCT), and domestic grants.

27) OECD USING PATENT COUNTS FOR CROSS-COUNTRY: COMPARISONS OF TECHNOLOGY OUTPUT, p.133

- Foreign applications (including PCT) and grants.

The Netherlands (1994)

- EPO grants, date of priority.

OECD, MSTI (2000)

- Applications from OECD Member countries, resident and non-resident applications, by date of application/ or publication, by country of residence of the applicant.

STI Review No. 27

134

© OECD 2001

patent-based indicators in response to the steady increase in demand for indicators for economic analysis, coupled with a distinct improvement in data supply (databases are a richer source of information and more widely available), underlines a crucial need for harmonisation.

This article addresses basic methodological problems associated with patent counts. Its aim is to propose rules and methods for calculating higher-quality patent-based indicators of the technology produced and used by countries. A range of issues relating to the counting process are addressed: choice of patent office, choice of a reference date, choice of country of attribution, and choice of the set of patents to be counted (domestic patents and patent “families”).

II. PATENTS AS A SOURCE OF STATISTICAL DATA

The information content of patent documents

A patent applicant files a document with the patent office of the country in which he is seeking protection for his invention. The patent document is a rich

Box 2. A sample of recently published patents statistics (cont.)

United States, NSF (1998)

- USPTO grants, date of grant, by inventor.
- Grants in large countries, date of grant, by inventor.
- Patent families for certain technology areas, by priority date, by priority country.

Sources: BMBF (1998), Bundesministerium für Bildung und Forschung, *Facts and Figures 1998*.

Department of Industry, Science and Technology (1996), *Australian Business Innovation*

-- *A Strategic Analysis*.

European Commission (1998), *Second European Report on S&T Indicators, 1997* --

Appendix.

Japanese Science and Technology Agency (1996), *Indicators of Science and Technology*.

Het Nederlands Observatorium van Wetenschap en Technologie (1994), *Wetenschap*

-- *en technologie* -- *Indicatoren, 1994*.

NSF (1998), *Science and Engineering Indicators, 1998*.

OECD (2000), *Main Science and Technology Indicators, 2000-2*, Paris.

OST (1998), *Science et Technologie* -- *Indicateurs 1998*, Paris

5. 글로벌 인적자본 통계

「 」
 (capital) “
 (the equipment and structures
 used to produce goods and services)”
 (公理) .28)
 < (resources)>

< (capital)> (etymology) 4 (意
 味素) : ① (source), ②
 (talent), ③ , ④
 - (life).

:(cattle)
 (live-stock)

28) Jonathan Nitzan(1998).
 “Differential accumulation: towards a new political economy of capital.” Review of International
 Political Economy 5:2 Summer 1998: 169-216

29) . “The circulation of commodities is the starting point of capital. The production of commodities, their circulation, and that more developed form of their circulation called commerce, these form the historical groundwork from which it rises. The modern history of capital dates from the creation in the 16th century of a world embracing commerce and a world-embracing market. If we abstract from the material substance of the circulation of commodities,,, we find its final result to be money: this final product of the circulation of commodities is the first form in which capital appears.”

- (labor power) (labour) 1
(capacity) (capabilities) .30)
< > .
31) <
>
.32)
(capacity)
(labour itself)
< (labour power in-use labour power in-action)³³⁾
(“ ”). < >
< > .34)
.
-
- 30) “By labour-power or capacity for labour is to be understood the aggregate of these mental and physical capabilities existing in a human being, which he exercises whenever he produces a use-value of any description.”
- 31) “ ” , 3
- 32) The value of labour-power is determined, as in the case of every other commodity, by the labour-time necessary for the production, and consequently also the reproduction, of this special article.the value of labour-power is the value of the means of subsistence necessary for the maintenance of the labourer. Labour-power, however, becomes a reality only by its exercise; it sets itself in action only by working. But thereby a definite quantity of human muscle, nerve, brain, &c., is wasted, and these require to be restored. When we speak of capacity for labour we do not abstract from the necessary means of subsistence
- 33) THE capitalist buys labour-power in order to use it; and labour-power in use is labour itself..... The purchaser of labour-power consumes it by setting the seller of it to work. By working, the latter becomes actually, what before he only was potentially, labour-power in action, a labourer.
- 34) While the labourer is at work, his labour constantly undergoes a transformation: from being motion, it becomes an object without motion; from being the labourer working, it becomes the thing produced. At the end of one hour's spinning, that act is represented by a definite quantity of yarn; in other words, a definite quantity of labour, namely that of one hour, has become embodied in the cotton.

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(flow)

(stock)

stock

flow

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<human

resource in action>

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HRD

6. 향후 과제

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 (人材)
 . - -
 (人材
 統計)
 .
 (大學之道: 物有 本
 末 事有 終始) .

(2008).
R2008-26-01.
(2008) :
(2006),
(1999),
(2006)
(2008)
(2008),
(2006),
(2006).
(2003),
(2005),
(2002),
(2006),
() , :

Auriol, Laudeline (2007), Labour Market Characteristics and International Mobility of Doctorate Holders: Results for Seven Countries. OECD. STI WORKING PAPER 2007/2

COMMISSION OF THE EUROPEAN COMMUNITIES(2000).Making a reality of The European Research Area: Guidelines for EU research activities(2002-2006)

- Boyle, Mark, Suzanne Motherwell(2007). ATTRACTING AND RETAINING TALENT: LESSONS FOR SCOTTISH POLICY MAKERS FROM THE EXPERIENCES OF SCOTTISH EXPATRIATES in DUBLIN. www.scotecon.net
- Patrica Kubow et al., Multidimensional Citizenship: Educational Policy for the 21st Century, In John J. Cogan, Ray Derricott(eds.), Citizenship for the 21st Century-An International Perspective on Education(London: Kogan Page Limited, 1998)
- Kapstein Ethan B.(2002) VIRTUOUS CIRCLES?: HUMAN CAPITAL FORMATION, ECONOMIC DEVELOPMENT AND THE MULTINATIONAL ENTERPRISE. OECD Deveopment Center Working Paper No. 191.
- Pissarides, Christopher A.(2000) HUMAN CAPITAL AND GROWTH: A SYNTHESIS REPORT OECD Deveopment Center Working Paper No. 168.
- OECD Handbook for Internationally Comparative Education Statistics: Concepts, Standards, Definitions and Classifications
- OECD USING PATENT COUNTS FOR CROSS-COUNTRY: COMPARISONS OF TECHNOLOGY OUTPUT
- OECD(2009) Measuring Capital: OECD Manual, SECOND EDITION.
- Statistics Canada and NCES, US(1998) International life Skills Survey Project Advisory Group Briefing Materials.

과학기술인재육성을 위한 통계의 현황과 과제

이 정 재
(KISTEP)

1. 개요

2. 용어 정립 : 인력(통계) vs 인재(통계)

35)

(人才)

(人材)

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36).

· (2008) “ ‘ ’ ,

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3. 기존 관련 연구들

· (1998)

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(2001)

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36)

(2006) (2001)
NSF ,

(2008)

4. 과학기술인력정책 관련 주요 방향

MB
「
(2006~2010)」
(1). 1 ‘
. 2 ‘
. 3 ‘
. 4
5 ‘

〈표 1〉 이공계인력 육성·지원 기본계획(2006~2010) 수정의 주요 방향

기존		추진전략의 변화	수정	
추진 영역	중점 추진 과제		중점 추진 과제	추진 영역
	1.	○ () ○ -	1.	
	2. .		2.	
	3.		3.	
	4.	○ () ○ .	4.	
			5.	
			6.	
	5.	○	7.	
	6. ()		8. .	
			9.	
	7. . .	○ (sector council) ○ / ○	10. . .	
	8.		11.	
	9. .		12.	
	10.		13.	

11.				
12.		○	14.	
13.			15.	
14.				

: . (2006~2010)

5. 과학기술인력의 범위와 규모

. ,

OECD, UNESCO .

(2).

「

」 2 ‘ ,

. OECD ,

() OECD

(1

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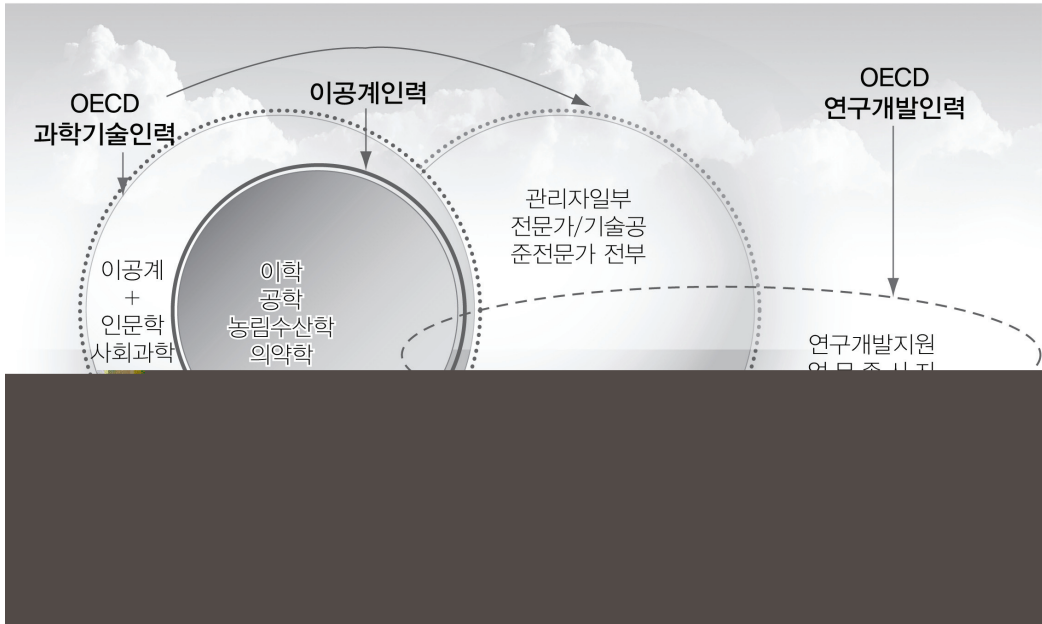
〈표 2〉 이공계(과학기술)인력의 국제기준 비교

		OECD	UNESCO
		HRST	STP
	, ,	, , , , ,	, , , , ,
		,	,
	:	:	:

: (2007)

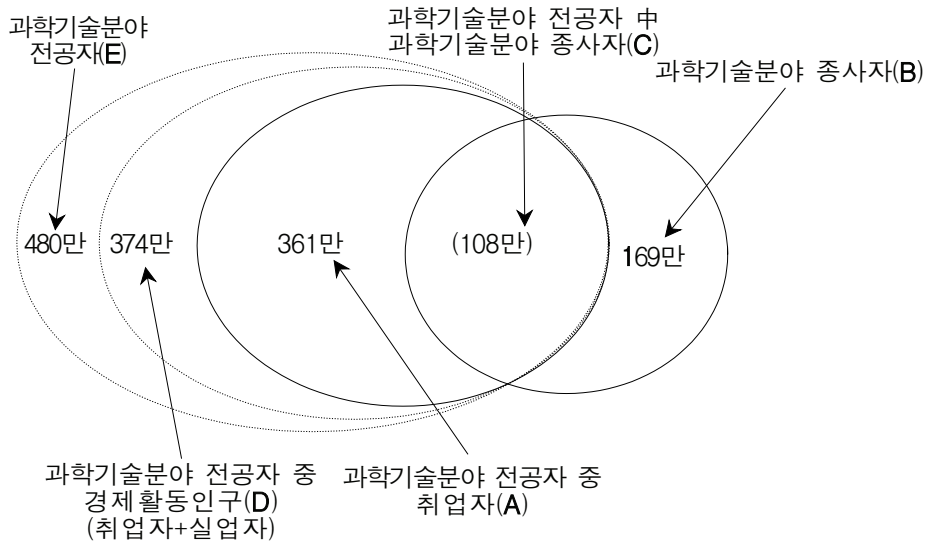
•

• (2007) , 2005 499
, OECD 1,110
. OECD
, 540 (2).



: (2007)

〈그림 1〉 이공계인력과 OECD 과학기술인력 범위



〈그림 2〉 국내 과학기술인력의 규모

6. 국외 과학기술인력관련 통계 현황³⁷⁾

. OECD

OECD

. MSTI(Main Science and Technology Indicators) , , STI Scoreboard(Science, Technology and Industry Scoreboard) . () , (Careers of Doctorate Holders)' .

1) MSTI (Main Science and Technology Indicators)

MSTI OECD (EAS, Economic Analysis and Statistics) 2 (,) OECD 30 (, ,) 9 , , , 1981 . , (Headcount) FTE(, , Full Time Equivalent) 38) , , (, ,) .

2) STI Scoreboard (Science, Technology and Industry Scoreboard)

STI Scoreboard OECD ,

37)

38) :

OECD
 ((EAS, Economic Analysis and Statistics) (NESTI,
 National Experts on Science and Technology Indicators)
 , 2007
 9
 OECD

3) (CDH, Careers of Doctorate Holders) 2004 OECD CSTP(Committee for Scientific and Technological Policy)

, 2005 CDH , CDH OECD NESTI
 . NESTI 2005 2 40
 CDH , ,
 (, , ,
) (), ,
 . 2005 7 (, , , , ,
 ,) . 39) 2007
 . CDH

39) OECD(2007), 'Labour market characteristics and international mobility of doctorate holders: Results for seven countries,' STI working paper 2007/2, OECD

NSF
(SED),
(SGSPCE),
(NSCG), (NSRCG), (SDR)
(3). SED SGSPCE WebCASPAR (Integrated
S&E Resource Data System) DB , NSCG, NSRCG, SDR
SESTAT(Scientists and Engineers Statistical Data System) DB .

〈표 3〉 미국의 과학기술인력 관련 조사통계 현황

(SED)	()	, ,	()
(SGSPSE)	, ,	, ,	
(NSCG)		, , ,	()
(NSRCG)	,		
(SDR)			

1) 1. SED(Survey of Earned Doctorates), SGSPST(Survey of Graduate Students and Postdoctorates in S&E), NSCG(National Survey of College Graduates), NSRCG(National Survey of Recent College Graduates), SDR(Survey of Doctorate Recipients)

1) (SED)

SED 1958

2007 420 48
(Science and Engineering
Doctorate Awards)

2) (SGSPSE)

SGSPSE NSF NIH

2007 582
375 207
(Graduate Students and Postdoctorates in S&E)

3) (NSCG)

NSCG

1993
1990 75
95, 97, 99 93
93
2 4~6 2003
2003 2
17
SESTAT

4) (NSRCG)

NSRCG 2

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‘

(Characteristics of Recent Science and Engineering Graduates)’

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5) (SDR)

SDR

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SED

, 2006

42

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‘

(Characteristics of Doctoral Scientists and Engineers in United

States)’

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(4).

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‘

(Survey on Postdoctoral Fellows and Research Assistants)' .

‘ (Survey on Career Paths of Postdoctoral Fellows)' . 8

(, ,)

(,) 40). ‘

(Survey on Research Activities and Attitudes of Postdoctoral Fellows)' (, , , , ,) 2.7

30 , 70% ,

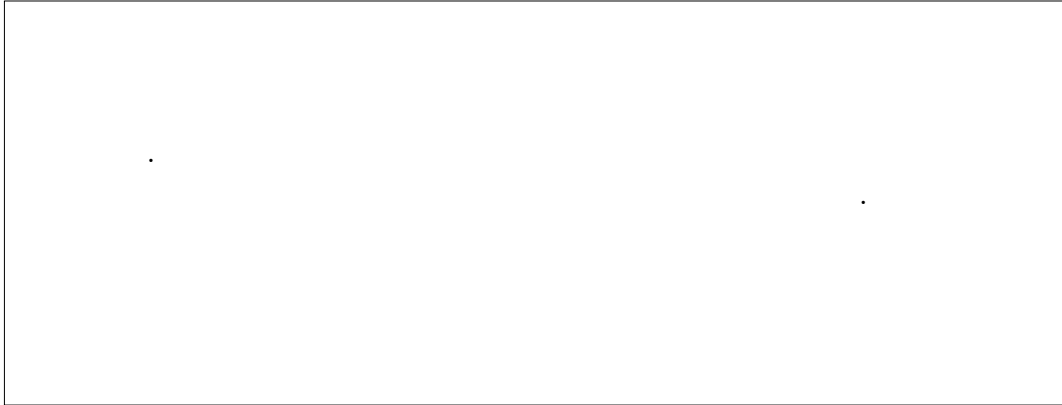
41).

〈표 4〉 일본의 과학기술 관련 주요 통계조사 및 자료집

			, , , http://www.stat.go.jp/data/kagaku/2009/index.htm
		NISTEP	(, ,) ,
		NISTEP	
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40) NISTEP(2007), "Survey of Trends in Career Paths of Postdoctoral Fellows at 8 Insitutions", Research Material 148

41) NISTEP(2009), "Survey on Research Activities and Attitudes of Postdoctoral Fellows", Research Material 159



2) (Survey on Postdoctoral Fellows and Research Assistants)

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3) (Survey on Career Paths of Postdoctoral Fellows)

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7. 국내 과학기술인력관련 통계 현황

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〈표 6〉 국내 과학기술인력 관련 조사통계 현황

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〈표 7〉 국내 과학기술인력 주요 조사통계

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〈표 8〉 이공계인력 실태조사의 주요 내용

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〈 표 9 〉 이공계인력 해외 유·출입 현황 조사의 주요 지표 (06년 기준)

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과학기술인재육성을 위한 통계의 현황과 과제 183

8. 국내 과학기술인력 관련 통계현황 분석 및 개선방향

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〈표 10〉 과학기술인력 관련 통계 현황 분석 결과

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	STI Scoreboard	○	△							○	○	○	
	(CDH)		○		○							○	
	(SED)		○	△								○	
	(SGSPSE)	○		△				○	○				
	(NSCG)		○	△						○	○	○	
	(NSRCG)		○	△						○	○		
	(SDR)		○	△	○							○	
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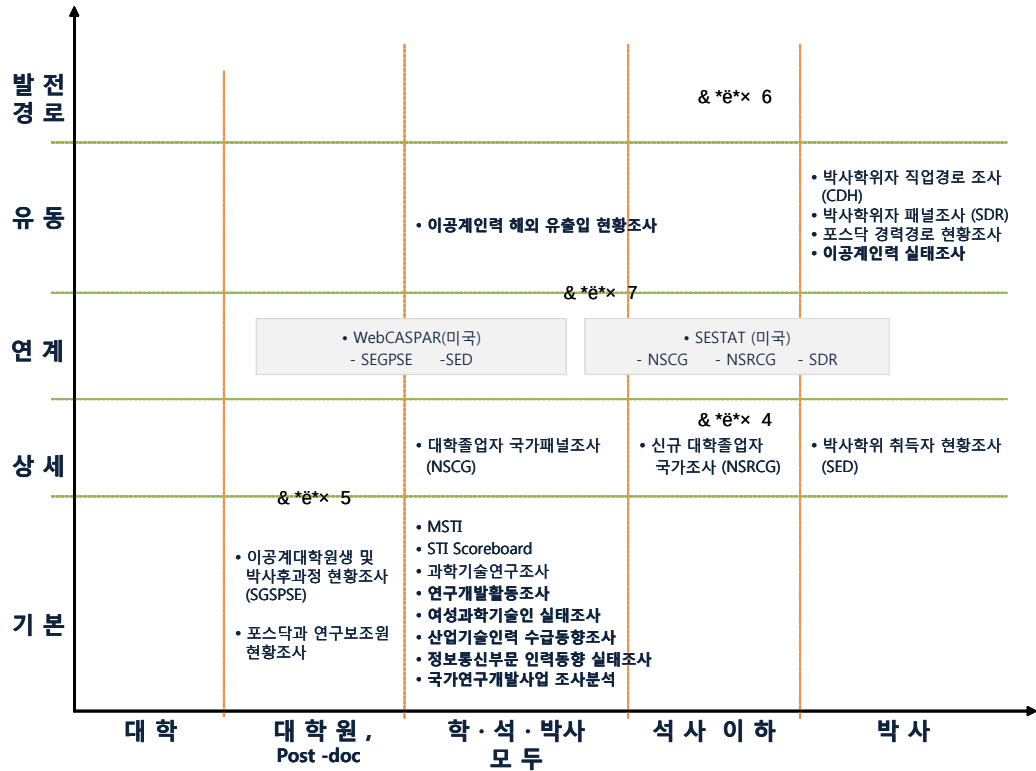
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〈그림 3〉 과학기술인력 관련 통계 현황과 개선영역 (포트폴리오)

9. 맺음말

- (2001), 「 」
- (1998), 「 」
- (2007), 「 KISTEP ISSUE PAPER 2007-15 」
- (2008), “ ”, 2008
- (2008), 「 」
- (2008), “ ()”, 2008
- (2006), 「 」
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- 2008 , /KISTEP
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- 2007 , /KOTEF
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- 2009 , /

www.nsf.gov

www.oecd.org

www.nistep.go.jp

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1. MSTI ()

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2. STI Scoreboard ()

OECD
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3. CDH

CDH(2005)

분류	항목
박사학위 교육과정	· 학위수여기관, 학위수여분야, 학위의 분야, 학위과정, 학위수여 연도, 학위기간, 박사학위이전 학위국가, 박사과정 재원
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진로 관련 경험과 과학 생산성	· 당해 교육 경험 여부 · 교육 활동의 업무 비중 · 연구원 경험 여부 · 비연구원: 비연구원의 비연구활동 이유, 향후 연구활동으로의 전환 계획, 이전 연구원 경험 여부 · 연구원(현재와 과거) : 연구원 선택 이유, 연구원 활동 기간 · 공인학술지에 연구논문게재 건수 · 특허권 보유 여부, 특허의 상용화 여부 · 창업 여부, 멘토링 프로그램이나 훈련 프로그램 실시 여부 · 석박사 논문지도 여부 · 국제 연구자와의 연구교류 여부
인적사항	· 생년월일, 출생지, 국적, 혼인여부, 부양가족 수

4. SDR

SDR(2005)

영역	항 목
현재 고용 상황	<일반현황> · 취업 여부, 구직여부(미취업이유, 취업시기), 미취업자(미취업 이유, 취업 시기, 이전직업 유형), 주당 취업시간, 풀타임/파트타임/파트타임 이유, 취업 전 퇴직 여부
	<현 직장> · 고용주(주소, 이름, 사업유형, 회사규모, 회사 연혁) · 회사유형(자영업, 민간부문 영리, 민간부문 비영리, 지방정부, 주정부, 군, 연방정부-공무원, 기타) · 교육기관여부(유형, 지위, 교수지위, 종신교수지위)
	<현 직장의 주 업무> · 현 직장의 주 업무 · 직업유형(자유 응답식, 코드 기입), 직무수준(전공분야별 학사이상/이하), 포스트닥 여부 및 이유, 현재직업의 취업기간 · 전공분야와 직무관련성 : 직무관련성이 없는 분야에서 일하는 이유, 직무내용/주된 요소 · 타인 대상 감독 여부 : 직무만족도(임금, 기타 혜택, 안정성, 위치, 승진 기회, 지적 도전감, 책무성정도, 독립성 정도, 기여도, 전반적 만족도) · 근로소득/근로시간, 근로주간 · 작년기준 정부 지원 사업수행여부/정부 부처 유형 · 작년 소득
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최근 교육 경험	· 지난 2년간 학위취득여부, 학위취득분야, 학위취득년도, 학위취득 기간 학위 취득이유 · 학위취득경비의 고용주 지원여부 · 대학수강여부, 수강형태, 학위취득목적여부, 수강영역, 수강이유, 수강비에 대한 고용주 지원여부
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sY[Yu]f 33.

국가 인재통계 혁신 전략과 과제

2009 12 4

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