



친애하는 동료들 환영합니다

Welcome dear colleagues

나는 한국의 교사와 네덜란드 교사의 능력의 비교에 대해 말하는 것입니다

I will speak about:

**A comparison of the skills of
South Korean teachers and Dutch teachers**

Content of this presentation

Prologue

- What inspired us for doing this study?/ 연구의 필요성
- What do we know about the effectiveness of teaching?/ 교수효과성에 대한 선행 이론
- Constructing the ICALT instrument/ ICALT(교수행동분석국제비교연구) 도구 개발

The study

- Samples in South Korea and the Netherlands/한-네덜란드 샘플비교
- Psychometric quality of the ICALT instrument/ICALT도구의 특성
- Results/ 분석결과
- Do differences in working context matter?/차이의 원인은 ?
- Main and preliminary conclusions/ 잠정적 주요 결론



Measuring and comparing teaching skills in South Korea and the Netherlands

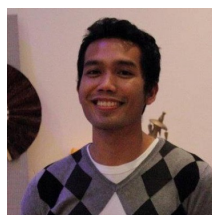
Introducing the Dutch research team



Wim van de Grift



Thoni Houtveen



Ridwan Maulana



Michelle Helms-Lorenz



Magda Isac



Anna Verkade

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Questions?

E-mail: W.J.C.M.van.de.Grift@RUG.NL

Phone: +31 6 12 75 76 87



Measuring and comparing teaching skills in South Korea and the Netherlands

Introducing the Korean research team



Seyeoung CHUN
 CNU



Okhwa LEE
 CBNU



Ilhwa CHUNG
 D.Design HS



Miae JEON
 CNU

E-mail: sychun56@gmail.com
 Phone: +82 10 6341 0399



Jongsu KIM
 Joongil HS



Jaehong LEE
 Emoon HS



Starting point of this study

Pearson's global index of /한-네 학업성취국제비교지표 cognitive skills and educational attainment

Country	Pearson index (2012)	Pearson index (2014)
	Z-score	Z-score
South Korea	1.26	1.30
Netherlands	.59	.58

**How can we improve educational attainment?/ 우리는 어떻게 교육
 적 성취를 향상시킬 수 있을까?**



PISA results

Country	% students below baseline (< PISA level 2)		
	reading <407	science <410	mathematics <420
South Korea	7.7	6.6	9.1
Netherlands	14.0	13.6	14.8
OECD average	18.0	17.8	23.0

In the Netherlands

the amount of students below baseline(기초능력이하 학생의 비율) is resp. 1.8; 2.1 and 1.6 as high as in South Korea

What can teachers do to diminish

the amount of 'below baseline students'?/ 기초학력미달자를 어떻게 줄일 것인가?



Reviews of studies into effectiveness of teaching/ 교수효과성에 대한 주요 선행이론들

- Purkey & Smith, 1983, 1985
- Scheerens, 1989, 1992, 2008
- Van de Grift, 1985, 1990
- Levine & Lezotte, 1990, 1995
- Creemers, 1991, 1994
- Walberg & Haertel, 1992
- Ellis & Worthington, 1994
- Cotton, 1995
- Sammons, Hiram & Mortimore, 1995
- Wright, Horn & Sanders, 1997
- Marzano, Pickering & Pollock, 2001
- Hanushek & Rivkin, 2006
- Hattie, 2009; 2012
- Muijs & Reynolds, 2011



The teacher really matters/ 결국 교사의 질이 문제다.

15-25% of the differences in student's achievements might be explained by the work of teachers / 학생성취의 15-25%는 교사 수업의 질에 의해 결정된다.

- Brandsma & Knuver, 1989
- Bosker & Witziers, 1996
- Wijnstra, Ouwers & Béguin, 2003
- Roeleveld, 2003
- Houtveen, Van de Grift & Creemers, 2004
- Rockoff, 2004
- Rivkin, Hanushek & Kain, 2005
- Houtveen & Van de Grift, 2007a; 2007b
- Houtveen, Van de Grift, & Brokamp, 2014
- Aaronson, Barrow & Sander, 2007
- Kane & Staiger, 2008
- Hanushek & Rivkin, 2010



The teacher's impact is high/ 교사의 영향력이 크다

Students of teachers

with a full standard deviation better teaching skills

have 10% tot 25% more learning gain (1표준편차 이상 좋은 수업기술을 가진 교사에게 배운 학생들은 10%에서 최대 25%만큼 더 성적이 높다)

(Aaronson, Barrow & Sander, 2007; Brandsma & Knuver, 1989; Bosker & Witziers, 1996; Hanushek & Rivkin, 2010; Houtveen & Van de Grift, 2007a; 2007b; Kane & Staiger, 2008; Rivkin, Hanushek & Kain, 2005; Roeleveld, 2003; Rockoff, 2004; Wijnstra, Ouwers & Béguin, 2003)

Students of teachers

with a full standard deviation better teaching skills

earn in later life on average 20.000 dollar more/(1표준편차 이상 좋은 수업기술을 가진 교사에게 배운 학생들은 성년기에 20,000불 이상 소득이 높다)
(Hanushek, 2011)



Teaching activities that matter/ 교사수업행동의 영향력은...

From the original educational effectiveness studies we distilled/ 선행연구들로부터 도출한 교육효과성 관련 수업행동

- 48 high inferential teaching activities/ 48개 추론(관측) 쉬운 행동
- 103 low inferential teaching activities/ 103개 추론(관측) 어려운 행동

These 151 activities were sorted in 9 main categories/ 151개 행동을 9개 주범주로 분류

- **Opportunity to learn the minimum objectives/**최소목표를 배울 기회 제공
- **Monitoring student's achievements/**학생의 성취 점검
- **Special measures for struggling learners/**힘든 학생을 위한 특별조치
- **Safe and stimulating educational climate/**안전하고 고무적인 수업분위기
- **Efficient classroom management/**효과적 수업관리
- **Clear and structured instruction/**명료하고 구조화된 강의
- **Intensive and activating teaching/**집중적이고 활동적인 수업
- **Teaching learning strategies/**학습전략을 가르침
- **Differentiating instruction/** 개별화된 강의

This was around 1995

the starting point for constructing the ICALT instrument



Not all teaching activities are suitable for observation/ 그러나 모든 행동을 관찰할수는 없다

- Opportunity to learn the minimum objectives/최소목표를 배울 기회 제공
- Monitoring student's achievements/학생의 성취 점검
- Special measures for struggling learners/ 힘든 학생을 위한 특별조치
- Safe and stimulating ed'l climate/안전하고 고무적인 수업분위기
- Efficient classroom management/효과적 수업관리
- Clear and structured instruction/명료하고 구조화된 강의
- Intensive and activating teaching/명료하고 구조화된 강의
- Teaching learning strategies/학습전략을 가르침
- Differentiating instruction/ 개별화된 강의

During this presentation we are only working with the teaching activities suitable for observation /관찰 가능한 수업행동들을 대상으로 연구를 수행함



Score: 1= mostly weak; 2=more often weak than strong; 3= more often strong than weak; 4= mostly strong

Safe and stimulating learning climate	1 shows respect for students in behaviour and language	1 2 3
	2 creates a relaxed atmosphere	1 2 3
	3 supports student self-confidence	1 2 3
	4 ensures mutual respect	1 2 3
Efficient classroom management	5 ensures that the lesson runs smoothly	1 2 3
	6 checks during processing whether students are carrying out tasks properly	1 2 3
	7 ensures effective class management	1 2 3
	8 uses learning time efficiently	1 2 3
Clear and structured instruction	9 explains the subject matter clearly	1 2 3
	10 gives feedback to students	1 2 3
	11 involves all students in the lesson	1 2 3
	12 checks during instruction whether students have understood the subject matter	1 2 3
	13 encourages students to do their best	1 2 3
	14 gives well-structured lesson	1 2 3
Intensive and activating teaching	15 clearly explains teaching tools and tasks	1 2 3
	16 uses teaching methods that activate students	1 2 3
	17 boosts the self-confidence of weak students	1 2 3
	18 encourages students to reflect on solutions	1 2 3
	19 asks questions that encourage students to think	1 2 3
	20 has students think out loud	1 2 3
	21 provides interactive instruction	1 2 3
	22 explains the lesson objectives at the start of the lesson	1 2 3
Teaching learning strategies	23 teaches students how to simplify complex problems	1 2 3
	24 encourages the use of checking activities	1 2 3
	25 teaches students to check solutions	1 2 3
	26 encourages students to apply what they have learned	1 2 3
	27 encourages students to think critically	1 2 3
Differentiating instruction	28 asks students to reflect on approach strategies	1 2 3
	29 checks whether the lesson objectives have been achieved	1 2 3
	30 offers weak students additional learning and instruction time	1 2 3

수업관찰도구(관찰전문가 훈련용)

국가명 : 대한민국 Country name:	수업관찰일(연-월-일) : 2014. . . Date observation (dd-mm-yyyy):
학교명 : School name:	관찰시간: () 0= 1, 2교시. 1= 3, 4교시. 2= 5, 6교시. 3= 7, 8교시. Time observation: 0=early morning 1=late morning 2=early afternoon 3=late fternoon
지역 : 대전(), 충남(), 충북() Location name:	학년: 중()학년 고()학년 (수준별경우)()반 Class:
학교급: () 0=초등학교 ; 1=중등학교 Level of education: 0=primary education; 1=secondary education	수강학생수 : ()명 No of learners present:
학교유형: () 0=일반계 ; 1=특성화(실업) School type: 0=general; 1=vocational	관찰교사명 : Name observer:
설립유형: () 0=국.공립 ; 1=사립 School denomination: 0=public; 1=private	관찰교사의 담당과목 : Subject observer:
수업담당 교사명 : Name teacher:	관찰전문가성별: 남(), 여() Gender observer: M / F
수업교사담당과목(관찰대상과목) Subject teacher:	관찰교사의 경력: Years of experience observer:
수업교사 성별: 남(), 여() Gender teacher: M/F	RUG훈련참가여부: 예(), 아니오() Has the observer received training at the RUG Yes/No
수업담당교사의 경력: Years of teaching experience teacher:	관찰교사의 직업 : () 0=학교교사; 1=대학교수; 2=기타(상세히) Occupation observer: 0=school teacher; 1=university teacher, 2=other Please specify...

지표 : 교사 Indicator: The teacher...		결과1 Results 1	대표적인 실천사례 : 이 선생님은 Examples of good practice: The teacher ..	관찰2 Observed2
안전하고 고무적인 수업분위기 Safe and stimulating learning climate	1	1 2 3 4	학생들의 말을 중간에서 끊지 않는다. ...lets learners finish their sentences	0 1
			학생들이 반드시 해야 할 말을 경청한다 ...listens to what learners have to say	0 1
			틀에 박힌 타입으로 단정지어 말을 않는다. ...does not make role stereotyping remarks	0 1
	2	1 2 3 4	학생들에게 긍정적으로 이야기 해준다 ...addresses learners in a positive manner	0 1
			유머를 사용하여 자극을 준다. ...uses and stimulates humour	0 1
			학생들의 실수를 인정한다. ...accepts the fact that learners make mistakes	0 1
			모든 학생들에 대한 헌신과 공감을 보여 준다. ...shows compassion and empathy for all learners present	0 1
			학생들의 질문과 발표에 긍정적인 피드백을 한다. ...gives positive feedback on questions and remarks from learners	0 1
			학생들의 활동에 대해 칭찬을 한다. ...compliments learners on their work	0 1
	3	1 2 3 4	학생들이 기여한 부분을 인정해 준다. ...acknowledges the contributions that learners make	0 1
			학생들끼리 서로 말을 듣도록 격려한다. ...stimulates learners to listen to each other	0 1
	4	1 2 3 4	다른 학생들을 놀리는 일이 없도록 관여한다. ...intervenes when learners make fun of someone	0 1
			문화적 다양성과 개성을 유지할 수 있도록 한다. ...keeps (cultural) differences and idiosyncrasies in mind	0 1
			학생들간 일체감을 갖도록 고무한다. ...stimulates solidarity between learners	0 1
			모둠활동을 경험할 수 있도록 지원한다. ...encourages learners to experience activities as group events	0 1

효율적 운영 Efficient organisation	5	수업이 질서 있게 진행되도록 노력한다. ...ensures the lesson proceeds in an orderly manner	1 2 3 4	학생들이 질서있게 교실에 들어오고 착석하게 한다. ...Learners enter and settle in an orderly manner	0 1
				문제가 있을 때 적시에 적절히 관여한다. ...intervenes timely and appropriately in case of disorder	0 1
				합의된 규정과 행동규칙을 준수하게 한다. ...safeguards the agreed rules and codes of conduct	0 1
				수업이 끝날 때까지 모든 학생들이 활동에 참여하도록 한다. ...keeps all learners involved in activities until the end of the lesson	0 1
				학생들이 도움이 필요할 때, 무엇을 해야 할지 분명히 알려주고, 언제 도움을 요청 할지 명확히 설명한다. ...makes sure that learners know what to do if they need help with their work and explains clearly when they can ask for help	0 1
				수업중 과제가 끝난 다음 어떻게 해야할지 정확히 알려준다. ...makes sure learners know what to do when they have finished their work	0 1
				학생들이 무엇을 해야 하는지를 이해했는지 확인한다. ...checks whether learners have understood what they have to do	0 1
	6	학생들이 적합한 방식으로 활동을 수행하는지 모니터한다. ...monitors to ensure learners carry out activities in the appropriate manner	1 2 3 4	과제수행을 하는 동안 사회적 관계를 하고 있는지 피드백 한다. ...provides feedback on learners' social functioning whilst carrying out a task	0 1

지표 : 교사 Indicator: The teacher...			결과1 Results 1	대표적인 실천사례 : 이 선생님은 Examples of good practice: The teacher ..	관찰2 Observed2
효율적 운영 Efficient organisation	7	효과적으로 수업을 관리한다. ... provides effective classroom management	1 2 3 4	어떤 자료가 쓰여질지 명확히 설명 한다 ...explains clearly which materials can be used	0 1
				수업자료 사용 준비가 잘 되어 있다. The materials for the lesson are ready for use	0 1
				수업자료가 학습자 수준과 발달단계에 맞게 제공된다. Materials are geared at the right level and developmental stage of the learners	0 1
	8	학습시간을 효율적으로 사용한다. ... uses the time for learning efficiently	1 2 3 4	정시에 수업을 시작한다. ... starts the lesson on time	0 1
				수업의 시작, 중간, 끝 지점에 시간 낭비를 안 한다. ... does not waste time at the beginning, during, or at the end of the lesson	0 1
				불필요한 중단이 안 일어나도록 한다 ...prevents any unnecessary breaks from occurring	0 1
				학생들이 기다리지 않도록 한다. ...does not keep learners waiting	0 1

명료하고 구조화된 수업분위기 Clear and structured instructions	9	명료한 방식으로 수업내용을 제시하고 설명한다. ...presents and explains the subject material in a clear manner	1 2 3 4	학생들의 사전지식을 일깨운다. ...activates prior knowledge of learners	0 1
				차근차근 단계를 밟아가며 수업한다. ...gives staged instructions	0 1
				학생들이 이해할 수 있는 질문을 던진다 ...poses questions which learners can understand	0 1
				때때로 수업내용을 요약해준다. ...summarises the subject material from time to time	0 1
	10	학생들에게 피드백 한다. ...gives feedback to learners	1 2 3 4	대답이 맞고 틀린지 여부를 명확히 알려준다 ...makes clear whether an answer is right or wrong	0 1
				대답이 왜 맞고 틀린지 명확히 설명해준다. ...makes clear why an answer is right or wrong	0 1
				학생이 대답에 이르는 방식에 대해 피드백을 해준다. ...gives feedback on the way in which learners have arrived at their answer	0 1
	11	모든 학생들을 수업에 참여시킨다. ...engages all learners in the lesson	1 2 3 4	활발한 참여를 유도할 수 있는 학생 과제를 만든다. ...creates learners assignments which stimulate active participation	0 1
				학생들의 심화학습을 도울 수 있는 질문들을 한다. ...asks questions which stimulate learners to reflect	0 1
				학생들이 듣고 활동할 수 있도록 집중시킨다. ...makes sure that learners listen and/or continue working	0 1
				질문 후 '생각할 시간'을 허용한다 ...allows for 'thinking time' after asking a question	0 1
				참여하지 않는 학생들이 참여할 수 있도록 한다. ...also invites learners to participate who do not volunteer to do so	0 1

지표 : 교사 Indicator: The teacher...		결과1 Results 1	대표적인 실천사례 : 이 선생님은 Examples of good practice: The teacher ..	관찰2 Observed2
집중적이고 활발한 수업 Intensive	12	1 2 3 4	발표단계에서는 학생들이 수업 내용을 이해했는지 확인한다. ... during the presentation stage, checks whether learners have understood the subject material	0 1
			학생들이 학습내용을 이해하고 있는지 주기적으로 체크한다. ...checks regularly whether learners understand what the lesson is about	0 1
	13	1 2 3 4	학생들이 최선을 다하도록 고무시킨다. ... encourages learners to do their best	0 1
			최선을 다하는 학생을 칭찬한다. ...praises learners who do their best	0 1
			모든 학생들이 최선을 다해야 한다는 것을 명확히 한다. ...makes clear that all learners should do their best	0 1
	14	1 2 3 4	학생들이 달성해야 할 것에 대해 긍정적인 기대감을 표현한다. ...expresses positive expectations about what learners are going to achieve	0 1
			수업이 단계적으로 구성되고, 단계 간 전환이 잘 이루어진다. The lesson is built up in terms of clear stages and transitions between stages	0 1
			단순함에서 복잡함으로 이루어지는 수업 을 논리적으로 만든다. The lesson builds up logically, going from the simple to the complex	0 1
			활동과 과업은 발표 단계에서 제시된 자료와 관련이 있다. Activities and assignments are connected to the materials presented during the presentation stage	0 1
			수업에서 매우 다양한 발표, 설명, 통제 활동, 자유활동 등을 제공한다. The lesson offers a good variety of presentation, instruction, controlled practice, free practice, and so forth.	0 1

집중적이고 활발한 수업 Intensive	15	1 2 3 4	교육적 지원을 이용하는 방법과 과제수행 방법을 명료히 설명한다. ...gives a clear explanation of how to use didactic aids and how to carry out assignments	0 1
			수업의 목표와 과제가 서로 어떤 관계 가 있는지를 설명한다. ...explains how lesson aims and assignments relate to each other	0 1
			어떤 자료와 출처가 이용될 수 있는지 를 명확하게 설명한다. ...explains clearly which materials and sources can be used	0 1
	16	1 2 3 4	다양한 대화와 토론방법을 사용한다. ...uses diverse forms of conversation and discussion	0 1
			반복된 학습활동을 제공한다. ...offers controlled (pre-)practice	0 1
			소집단으로 나누어 활동하게 한다. ...lets learners work in groups	
			ICT기술을 활용한다. ...uses Information and Communication Technology (ICT, e.g., digiboard, beamer)	0 1
			다양한 교수전략을 사용한다. ...employs a variety of instruction strategies	0 1
			다양한 과제를 제시한다. ...varies assignments	0 1
			수업자료를 다양화 한다. ...varies lesson materials	0 1
			일상생활로부터 자료와 예를 가져온다. ...uses materials and examples from daily life	0 1
	17	1 2 3 4	여러 가지 방법으로 질문으로 한다. ...asks a range of questions	0 1
			부진한 학생들의 질문에 대해 피드백 한다. ...gives positive feedback on questions from weaker learners	0 1
			부진한 학생들이 공부해야 할 것에 대해 긍정적인 기대를 보여준다. ...displays positive expectations about what weaker learners have to achieve	0 1
			부진한 학생들이 공부하는 것을 칭찬한다. ...compliments weaker learners on their work	0 1
			부진한 학생들이 기여한 일에 대해 인정한다. ...acknowledges the contributions made by weaker learners	0 1

Intensive and activating teaching	18	학생들이 해결책에 대해 생각을 해보도록 한다. ...stimulates learners to think about solutions	1 2 3 4	weaker learners 해결책에 이를 수 있는 길을 보여준다. ...shows learners the path they can take towards a solution	0 1
				문제의 해결과 참고전략을 가르친다. ...teaches strategies for problem-solving and referencing	0 1
				자원 활용과 참고자료를 활용하는 방법을 가르친다. ...teaches learners how to consult sources and reference works	0 1
				문제해결을 위한 체크리스트를 제공한다. ...offers learners checklists for problem-solving	0 1
	19	학생들의 심화된 학습을 돕는 질문을 한다. ...asks questions which stimulate learners to reflect	1 2 3 4	질문에 답을 할 수 있는 기회를 모든 학생들에게 주기 위해 충분히 기다린다. ...waits long enough to give all learners the chance to answer a question	0 1
				다른 질문도 하게하고, 학생들 간 서로 설명을 하도록 격려한다. ...encourages learners to ask each other questions and explain things to each other	0 1
				자신들의 전략 추진과정에 대해 설명하게 한다. ...asks learners to explain the different steps of their strategy	0 1
				학습전략이 이해되었는지 정기적으로 확인한다. ...checks regularly whether instructions have been understood	0 1
				심화된 학습을 유도하고, 학생들의 피드백을 요하는 질문을 던진다. ...asks questions which stimulate reflection and learner feedback	0 1
				무엇에 대한 수업이었는지 학생들이 이해하였는지 주기적으로 확인한다. ...checks regularly whether learners understand what the lesson is about	0 1

지표 : 교사 Indicator: The teacher...		결과1 Results 1	대표적인 실천사례 : 이 선생님은 Examples of good practice: The teacher ..	관찰2 Observed2
집중적이고 활발한 수업 Intensive and activating teaching	20	1 2 3 4	학생들이 자신의 생각을 적극적으로 말하게 한다. ...lets learners think aloud	0 1
			학생들이 해결책을 말해보도록 요구한다. ...asks learners to verbalise solutions	0 1
	21	1 2 3 4	학생들 간 상호작용을 증진시킨다. ...promotes the interaction between learners	0 1
			교사와 학생 간 상호작용을 증진시킨다. ...promotes the interaction between teacher and learners	0 1
	22	1 2 3 4	수업을 시작하면서 학습목표를 알려준다. ...informs learners at the start of the lesson about the lesson aims	0 1
			과제의 목표와 학습목표를 명료하게 해준다. ...clarifies the aims of assignments and their learning purpose	0 1

학생 간 차이를 반영한 수업과 학습자 조절 Adjusting instructions and learner processing to inter-learner differences	23	학습목표 도달 여부를 평가한다. ...evaluates whether the lesson aims have been reached	1 2 3 4	수업목표가 도달되었는지 평가한다. ...evaluates whether the lesson aims have been reached	0 1
				학습자 수행수준을 평가한다. ...evaluates learners' performance	0 1
	24	부진학생들에게 추가 학습 및 교수시간을 마련한다. ...offers weaker learners extra study and instruction time	1 2 3 4	부진학생들에게 추가 공부시간을 마련한다. ...gives weaker learners extra study time	0 1
				부진학생들에게 보충설명을 해준다. ...gives weaker learners extra instruction time	0 1
				부진학생들에게 추가 학습과제를 부과한다. ...gives weaker learners extra exercises/practices	0 1
				부진학생들에게 사전 사후 지도를 해준다. ...gives weaker learners 'pre- or post-instruction'	0 1
	25	학생 간 차이를 고려하여, 수업방식을 적절하게 조절한다. ...adjusts instructions to relevant inter-learner differences	1 2 3 4	잘하는 학생들은 자기주도적 과제를 하게한다. ...puts learners who need little instructions (already) to work	0 1
				소집단이나 개별학생들에게 추가적인 수업시간을 제공한다. ...gives additional instructions to small groups or individual learners	0 1
				보통수준 학생에 대한 관심도 잃지않는다. ...does not simply focus on the average learner	0 1
	26	적정한 학생 간 차이를 고려하여 수업내용을 조절한다. ...adjusts the processing of subject matter to relevant inter-learner differences	1 2 3 4	학생에 따라 과제수행의 시간과 양을 조절한다. ...distinguishes between learners in terms of the length and size of assignments	0 1
				과제를 완수할 시간을 융통성 있게 한다. ...allows for flexibility in the time learners get to complete assignments	0 1
				일부 학생들에게 추가적인 도움과 수단을 사용하도록 한다. ...lets some learners use additional aids and means	0 1

지표 : 교사 Indicator: The teacher...		결과1 Results 1	대표적인 실천사례 : 이 선생님은 Examples of good practice: The teacher ..		
	27	학생들이 복잡한 문제를 단순화하는 방법을 가르친다. ...teaches learners how to simplify complex problems	1 2 3 4	복잡한 문제를 어떻게 단순화하는지 가르친다. ...teaches learners how to simplify complex problems	0 1
				복잡한 문제들을 단순 분류하는 방법을 가르친다. ...teaches learners how to break down complex problems into simpler ones	0 1
				복잡한 문제들을 정리하도록 가르친다. ...teaches learners to order complex problems	0 1
	28	학생들이 활동을 확인하는 방법을 유도한다 ...stimulates the use of control activities	1 2 3 4	글의 내용 이해를 위해 추측전략을 사용하는지 살펴본다. ...pays attention to prediction strategies for reading	0 1
				해결방법과 문제상황을 연결짓도록 한다. ...lets learners relate solutions to the context of a problem	0 1
				대안적 전략을 적용하도록 격려한다. ...stimulates the application of alternative strategies	0 1
	29	학습성과를 확인하도록 학생들에게 가르친다. ...teaches learners to check solutions	1 2 3 4	학습성과를 평가하도록 가르친다. ...teaches learners how to estimate outcomes	0 1
				학습성과를 예측해보도록 가르친다. ...teaches learners how to predict outcomes	0 1
				실천적 상황과 학습성과를 연계하도록 가르친다. ...teaches learners how to relate outcomes to the practical context	0 1

교수학습 전략 Teaching learning strategies	30	학생들이 배운 것을 활용하도록 유도한다. ...stimulates the application of what has been learned	1 2 3 4	다른 학습상황에서는 어떻게 학습이 될 수 있는지 의식할 수 있도록 자극한다. ... stimulates the conscious application of what has been learned in other (different) learning contexts	0 1
				하나의 해결책이 다른 상황에서는 어떻게 적용될 수 있을지 설명해준다. ...explains to learners how solutions can be applied in different situations	0 1
				예전에 풀어 본 문제와 연관짓는다. ...relates problems to previously solved problems	0 1
				어떤 일이 발생했는지에 대한 배경설명을 하라고 한다. ...asks learners to provide explanations for occurrences	0 1
	31	학생들이 비판적으로 생각하도록 유도한다. ...encourages learners to think critically	1 2 3 4	학생들의 의견을 요청한다. ...asks learners for their opinion	0 1
				주어진 해결책이나 응답에 대한 학생들의 의견을 묻는다. ...asks learners to reflect on solutions or answers given	0 1
				학생들 스스로 예를 제시해보라고 요구한다. ...asks learners to provide examples of their own	0 1
				학생들이 사용한 여러 단계별 전략들에 대해 설명해 보게 한다. ...asks learners to explain the different steps of the strategy applied	0 1
	32	심화된 학습 전략을 갖도록 요청한다. ...asks learners to reflect on practical strategies	1 2 3 4	가능한 문제해결 전략들에 대해 명료하게 설명해준다. ...gives an explicit explanation of possible (problem-solving) strategies	0 1
				여러 전략들이 가지고 있는 장단점들을 열거해 보라고 한다. ...asks learners to expand on the pros and cons of different strategies	0 1
					0 1
					0 1

지표 : 학습자들은 Indicator: The learners...		결과1	좋은 실천 사례 : 학습자들은 Examples of good practice: Learners...	관찰2
학습자 참여 Learner engagement	33	1 2 3 4	선생님의 강의에 집중한다. ...pay attention during instructions are given	0 1
			대화나 토론에 능동적으로 참여한다. ...participate actively in conversations and discussions	0 1
			질문을 한다. ...ask questions	0 1
	34	1 2 3 4	선생님의 강의를 열심히 듣는다. ...listen actively when instructions are being given	0 1
			추가적인 질문을 하면서 흥미를 보인다. ...show their interest by asking follow-up questions	0 1
	35	1 2 3 4	추가적인 질문을 한다. ...ask follow-up questions	0 1
			스스로 학습과정에 대한 책임감을 갖는다. ...show that they take responsibility for their own learning process	0 1
			자기주도적으로 공부한다. ...work independently	0 1
			솔선수범한다. ...take the initiative themselves	0 1
			시간을 효율적으로 쓴다. ...use their time efficiently	0 1

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For optimizing inter rater reliability we need: / 측정도구간 신뢰성 high inference items and low inference indicators/ 측정력 상하

scale	high inference items	low inference indicators	
Differentiating instruction	29 ...checks whether the lesson objectives have been achieved	1 2 3 4 ...evaluates whether the lesson aims have been reached ...evaluates learners' performance	0 1 0 1
	30 ...offers weak students additional learning and instruction time	1 2 3 4 ...gives weaker learners extra study time ...gives weaker learners extra instruction time ...gives weaker learners extra exercises/practices ...gives weaker learners 'pre- or post-instruction'	0 1 0 1 0 1 0 1
	31 ...adapts instruction to relevant student differences	1 2 3 4 ...puts learners who need little instructions (already) to work ...gives additional instructions to small groups or individual learners ...does not simply focus on the average learner	0 1 0 1 0 1
	32 ...adapts processing of subject matter to student differences	1 2 3 4 ...distinguishes between learners in terms of the length and size of assignments ...allows for flexibility in the time learners get to complete assignments ...lets some learners use additional aids and means	0 1 0 1 0 1



Samples of South Korean and Dutch teachers

	South Korea		Netherlands	
	teachers	schools	teachers	schools
secondary education	376	26	289	76

- In South Korea the data are gathered by trained Korean observers by a sample of 26 schools and 376 teachers (한국: 26 명관찰교사 376명 중등수업교사 관찰)
- The Dutch data are gathered by specially trained Dutch school inspectors by a random sample of 76 departments of schools for secondary education all over the country. In each school about 4 teachers were observed. (네: 76개 학교 수석교사, 4명 수업관찰)



Reliability (Cronbach's α) of ICALT scales

	basic skills			advanced skills			
	Safe learning climate	Classroom management	Instructional clarity	Activating learning	Teaching learning strategy	Differentiation	Student engagement
secondary education							
Netherlands	.89	.75	.85	.86	.81	.77	.88
South Korea	.81	.79	.86	.82	.85	.84	.84

- In both countries all scales are sufficiently reliable (Cronbach's $\alpha > .70$)/ 한네 모두 측정신뢰성 확인



Inter rater reliability of ICALT (South Korea)

	secondary education	
	Cohen's κ	effect size difference SK/NL
Netherlands	$\geq .70^{*)}$ good	
South Korea	.60 moderate/ good	.19

- Mutual consensus of both South Korean and Dutch observers varies between moderate and good
- South Korean observers are on average a little bit more (effect size .19) permissive than Dutch observers watching the same video

*) School inspectors in the Netherlands are trained until they reached a Cohen's κ of at least .70

Cohen's κ ($P_{obs} - P_{exp}) / (1 - P_{exp})$

poor	< .20		
fair	.20	-	.40
moderate	.40	-	.60
good	.60	-	.80
very good	.80	-	1.00



Predictive validity of ICALT scales /도구의 예측타당도 for student engagement (correlations)

	basic teaching skills			advanced teaching skills		
	Safe and stimulating learning climate	Efficient classroom management	Clear and structured Instruction	Activating students	Teaching learning strategies	Differen tiating instruction
Secondary education						
Netherlands	.64	.65	.64	.65	.51	.45
South Korea	.67	.68	.75	.75	.58	.61

- In both countries, all correlations between ICALT scales and student engagement are between .45 and .78 and significant ($< .001$)



Multi group confirmative factor analysis testing scalar equivalence

- two countries:
 - South Korea
 - Netherlands
- all six ICALT scales:
 - safe and stimulating learning climate
 - efficient classroom management
 - clear and structured instruction
 - intensive and activating teaching
 - teaching learning strategies
 - differentiating instruction

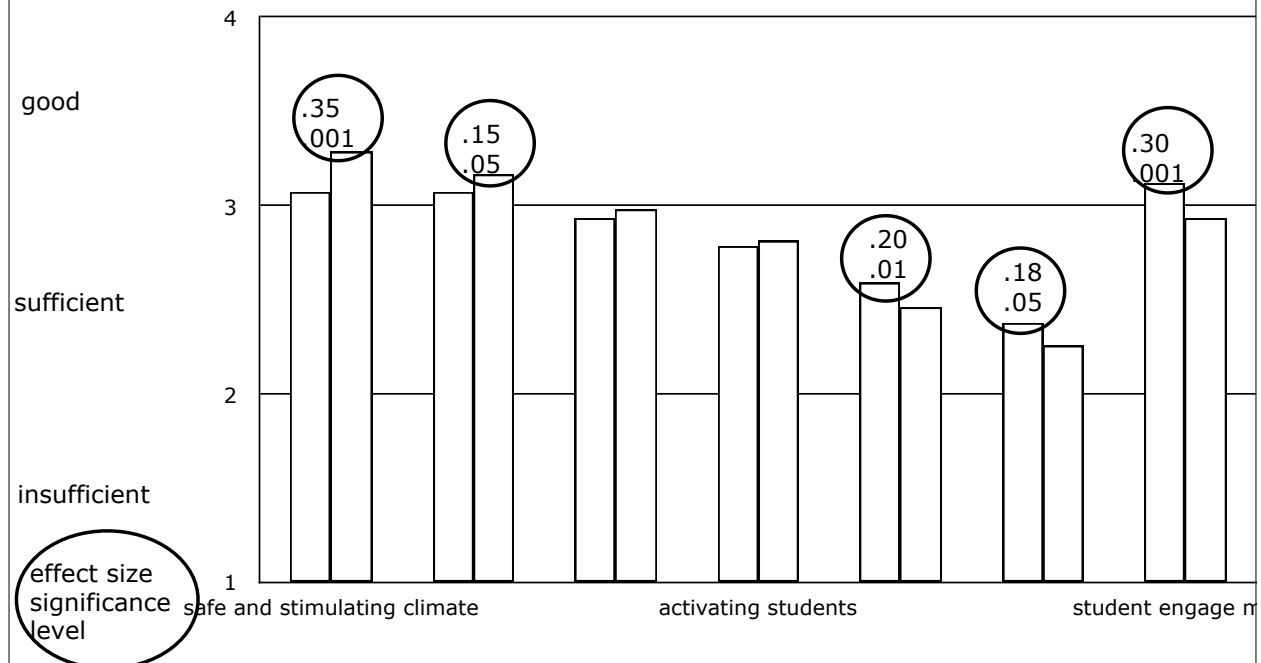
showed an acceptable fit in both primary and secondary education

	Secondary education	Norm
TLI	.939	$> .90$
CFI	.945	$> .90$
RMSEA	.077	$< .08$

We are allowed to compare the average scores of both countries



Average scores on ICALT scales in South Korea and the Netherlands



Contextual differences in samples

	Secondary education		
	South Korea	Netherlands	
% males	49	50	n.s.
experience	11.31	16.53	.000
class size	29.11	21.70	.000

The South Korean sample has teachers with: 한국교사들

- less experience/ 다소 경력이 낮고
- larger classes/ 학급규모는 크다

Is there a relationship between experience and class size and teaching behaviour?/ 혹시 경력과 학급규모의 관계?



Significant ($<.05$) correlations between ICALT scales and contextual variables

basic teaching skills				advanced teaching skills			
	Safe and stimulating learning climate	Efficient classroom manage	Clear and structured instruction	Intensive and activating teaching	Teaching learning strategies	Differen tiating instruc tion	Student engage ment
secondary education							
% males	-.11	-.11	-.09				
experience					.11		
class size	-.16	-.17	-.20	-.16	-.09	-.08	

- Female teachers outreach male teachers on all basic teaching skills / 여교사가 남교사가 기본스킬 우수
- Experienced teachers outreach less experienced teachers on teaching learning strategies/ 고경력교사의 스킬 수준 높음
- In small classes all basic and advanced teaching skills are better/ 학급규모가 적은 경우 기본-고급 스킬 모두에서 높음



Main conclusions (1)/주요결론

In both South Korea and the Netherlands
the six ICALT scales/6개의 ICALT척도는

- are sufficiently reliable / 충분히 신뢰할만하고
- have predictive value for student engagement/학생수업몰입도 예측력이 있으며
- have a comparable factor structure/ 비교가능함

This enables us to make comparisons
between the quality of teaching in both countries

*) except one small incident



Preliminary conclusions (2)/잠정결론

Dutch and South Korean teachers score on average 'good' on/양국 교사들은 대체로 다음 두 척도에서 양호함

- safe and stimulating learning climate /안정된수업분위기 조성
- efficient classroom management/효율적 수업운영

Dutch teachers significantly outreach South Korean teachers on these two basic teaching skills: /네델란드 교사가 두개 기본척도에서 잘함 ??

South Korean teachers significantly outreach Dutch teachers on advanced teaching skills:/한국 교사가 두개 고급척도에서 잘함

- teaching learning strategies/교수학습전략
- differentiating instruction/개별화수업 and
- students in South Korea are significantly more engaged/ 한국학생들이 수업몰입도가 높음

Differences in 다음 두 척도간에는 유의미한 차이가 없음

- clear and structured instruction /명료화하고 구조화된 수업
 - intensive and activating teaching/집중적이고 활발한 수업
- are not significant



Preliminary conclusions (3)

Female teachers show better teaching skills on all basic teaching tasks:/ 여교사들이 모든 기본척도에서 우수함

- safe and stimulating learning climate
- efficient classroom management
- clear and structured instruction

Dutch and South Korean teachers will score higher on all teaching skills when class sizes are smaller/ 학급규모가 작을 때 수업기술 높음



Note ...

- These preliminary conclusions should be confirmed in large simple random samples during the next stage of the ICALT3 project / ICALT3 연구를 통해, 보다 큰 샘플을 통해 후속연구 및 확인이 필요함



여러분의 관심에 감사드립니다

Thank you for your attention

Wim van de Grift



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comparing teaching skills in Europe

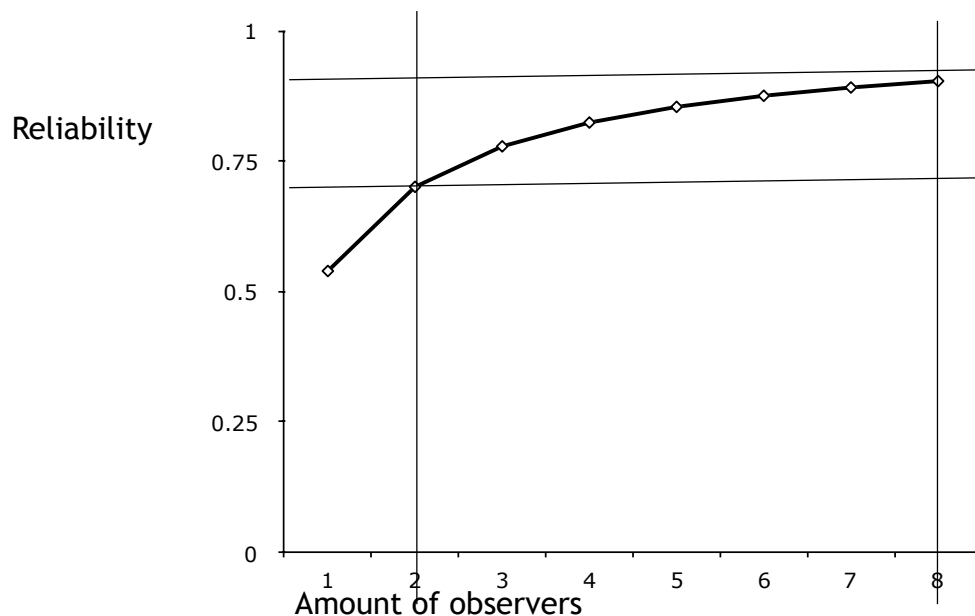
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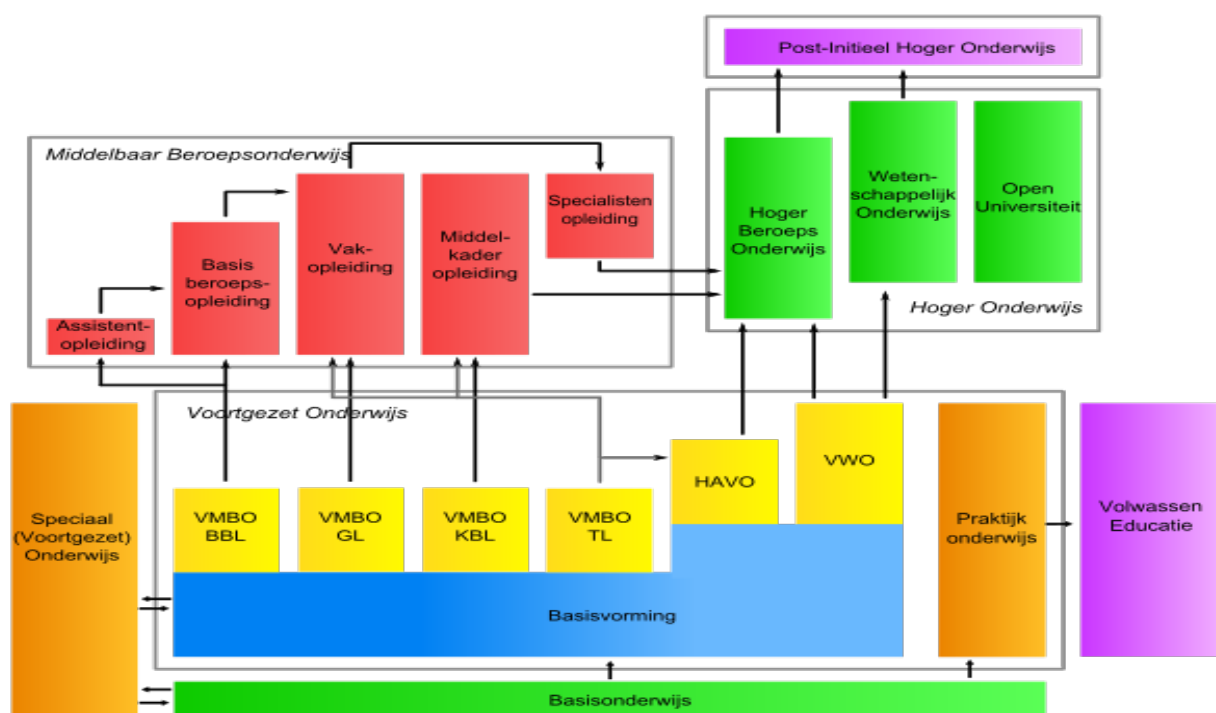
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How many observers do we need for a reliable diagnosis? / 측정신뢰도 확보에 필요한 샘플사이즈 곡선



The school system in the Netherlands / 네델란드 학제





How does the Dutch school system sort out their 12 year olds? / 초등졸업후 중등진학 경로선발방법

At the end of primary education
 a school type choice takes place for
 the first year of secondary education: /

초등학교 졸업 후 중등 첫 학년에서 5개 유형별, 4개의 조합이 가능한 진학패턴 가능

- **5 main school types, and**
- **4 possible combinations**

Since this year

the most important criterion is **the advice of the head teacher of primary education**, / 가장 중요한 변인은 초등학교 교장의 의견

a second criterion is the **CITO score at the end of primary education** / 두번째 변인은 CITO(초등졸업시험) 성적



How does the Dutch school system sort out their 12 year olds?

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BASISBEROEPSGERICHTE LEERWEG **501-520^{*)}**

Combinatie Basisberoeps en Kaderberoeps 519-525

KADERBEROEPSGERICHTE LEERWEG **523-528**

Combinatie Kaderberoeps en Gem of Theoretische leerweg 526-531

GEMENGDE EN THEORETISCHE LEERWEG **529-533**

Combinatie GT en HAVO 533-536

HAVO **537-540**

Combinatie HAVO en VWO 540-544

VWO, GYMNASIUM, TWEETALIG ONDERWIJS **545-550**

^{*) cito, 2014}



How to improve student outcomes? (1)

In **June 2013** the website of the Dutch Inspectorate stated:
8 schools in the 3 northern provinces have

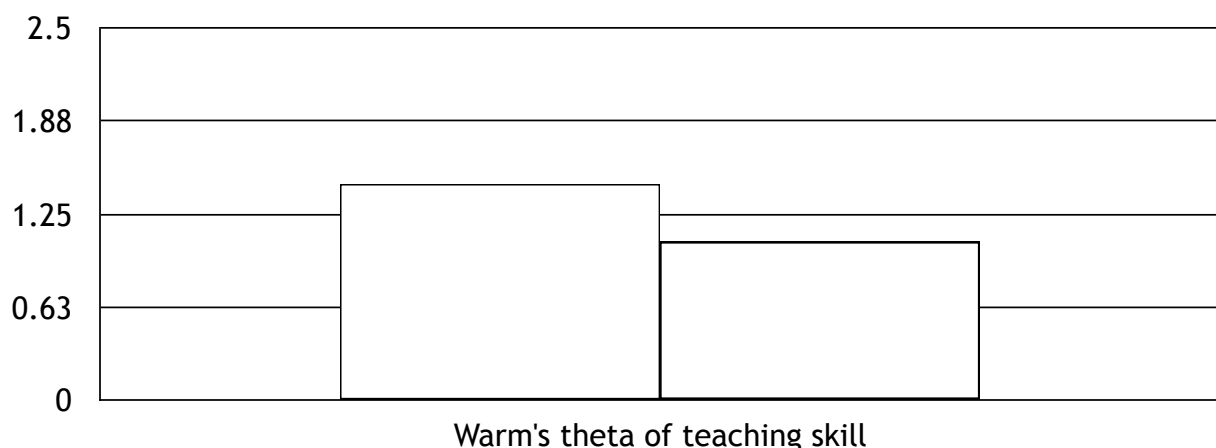
- for 3 years in a row
- average results on the national written exams
- **below** the level of schools with a comparable student population

Experts from Groningen University observed with the ICALT – instrument the quality of teaching in a national sample of 192 teachers

and compared the average quality of teaching of these 192 teachers with the national average



How to improve student outcomes? (2)

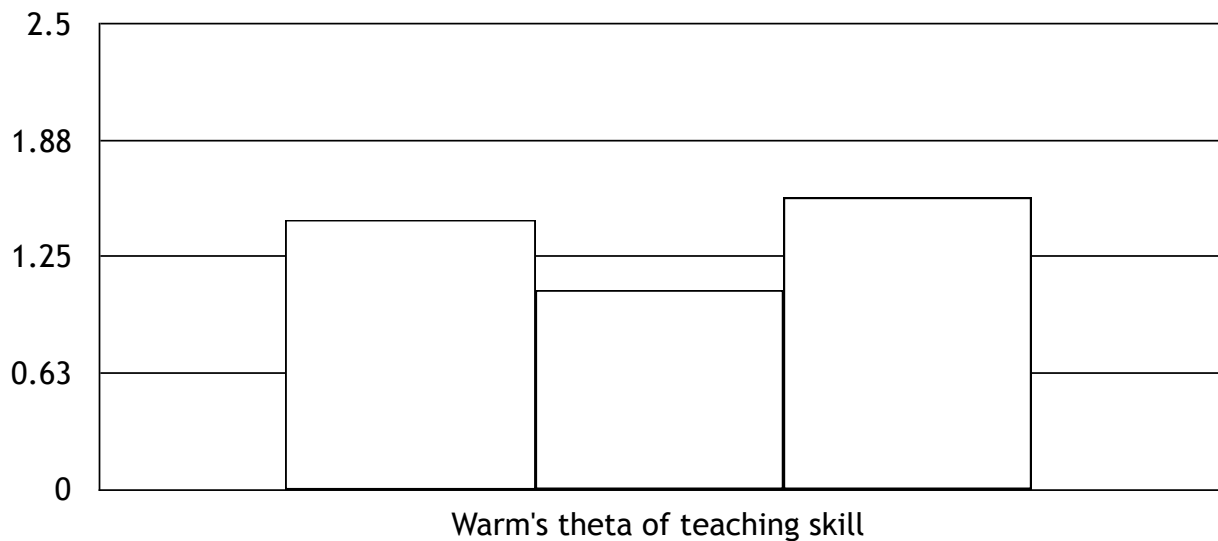


Teachers in the north showed significantly ($p=.003$) lower (e.s. $-.31$) teaching skills than the average teacher in the Netherlands

Experts from Groningen University coached the teachers in the north in their zone of proximal development, and observed them 3-6 months later again



How to improve student outcomes? (3)



Teachers in the north grew within 3-6 months significantly ($p < .000$) 41% of a standard deviation and have 3-6 months later on average about the same teaching skill as a random sample of teachers



How to improve student outcomes? (4)

In October 1, 2015 the website of the Dutch Inspectorate stated:
1 school in the 3 northern provinces
has for 3 years in a row average results on the national written exams **below** the level of schools with a comparable student population

This is a different school than the schools mentioned in the overview from June 1, 2013

Alternative explanations:

Do these schools with poor results on the central exams have changed their policy

- **selection and allocation students?**
- **retention?**

This is still under study