

# Are we effective in education in Infection Control?

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# Disclosure

- I have no conflicts of interest in relation to this presentation
- Presentation is intended as a reflexion for all of us who wish to teach in infection control and prevention

# Objectives

- Current issues about education
- Available evidence regarding effective strategies
- Experiences
- Some words about "psychology of changing"

# Putting Theory into Practice

"If you use a tool without knowing the theory, the tool may work in one situation and not in another, and you'll never know why it failed."

=Value of knowing the theory

Peter Senge (5<sup>th</sup> Discipline)



# Learning

- Human learning is a process of growing and change
- It implies transform knowledge in change of behavior



¿What we want to achieve with education in infection control?



Modify behavior to  
bring science to practice

# Education, education, education



Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives, Protecting People



International Federation  
of Infection Control



**APIC**<sup>®</sup>

*Spreading knowledge. Preventing infection.*

Association for Professionals in Infection Control and Epidemiology

Is recommended in all the guidelines





# Expected changes

- Avoid ineffective or dangerous practice (ej. preoperative shaving, brushes surgical handscrub, rutinary cultures)
- Adopt a new effective practice (ej. normothermia)
- Improve compliance of a wellknown effective practice (ej. maximum barriers)
- Limit the adoption of a practice to proven indications (ej. Antibioprolaxis)

Educative strategies are effective in achieving change of behavior?





# The theory

# Elements to consider in education

- Adult learning
- Selection of the methodology
- Evaluation

# Principles of adult learning

- Is more difficult to relearn than learn
- Utilizes knowledge & life experiences
- Is relevancy-oriented (motivation to learn is increased when the relevance of the "lesson" through real-life situations is clear)

# The selection of the methodology depend on the student (motivational approach)

- If exist
  - Personal motivation or
  - People feel themselves involved in the process



Lectures or workshops  
Consensus

# The selection of the methodology depend on the student (epidemiological approach)

- If
  - People require evidence o rationality in decision making



Clinical guidelines based on evidence




# The selection of the methodology depend on the student (Coherisitive approach)

- If needed
  - Behavior control



- Audit and feed back
- Remembers
- Incentives/sanctions

# The selection of the methodology depend on the student (social interaction approach)

- If require:
    - Leaders support
    - Adoption of models
- 
- Field visit (personal instruction)
  - Peer review

# Integral Approach

- Combination of methodologies.
- Non of them is better or worse. Need to be adapted through continuous evaluation of their results

¿What approach is better?

# Types of Evaluation

- In healthcare personnell

Proportion of practice compliance before and after the educational intervention

- In patients

Rates of infections before and after the educational intervention



# Impact of educational strategies

- Systematic Review of changes in medicaments prescription, request of laboratory tests, treatments and transfusion request
  - Cochrane Database of Systematic Reviews (OVID)
  - British Medical Journal (<http://www.bmj.com>)
  - Lilacs

*Miguel Araujo Ministerio de Salud Chile 2000*

# Results of intervention

- Distribution of information
  - All without effect or marginal effect (8 RCT)
- Local leaders
  - In general, favorable (7 RCT)
- Audit and feed back
  - Favorable (37 RCT)
- Educational field visits
  - Favorable (10 RCT) without effect 3 RCT

*Miguel Araujo Ministerio de Salud Chile 2000*

# The role of education in the prevention and control of infection: A review of the literature

- 38 studies
- Last 15 years
  - The role of education in improving practices
  - The effect of education in rates of infections
  - Teaching and learning in infection control

*Deborah J. Ward. Nurse Education Today 31 (2011) 9-17*



# The role of education in the prevention and control of infection: A review of the literature

- Lack of robust evidence of the efficacy of education in improving practice and reducing rates of infection
- Minimal literature available about the education of student nurses and midwives
- More evidence relating to staff preferences for methods of education (not necessarily reflect the best approaches for learning)
- Education may increase knowledge, but not necessarily related to an improvement in practice

*Deborah J. Ward. Nurse Education Today 31 (2011) 9-17*

# The role of education in the prevention and control of infection: A review of the literature

- Computer aided learning was identified as an acceptable method of teaching and learning (staff could complete online courses at their own pace and in their own time)
- Limitations and methodological issues in the studies
- Combinations of strategies difficult the identification of the impact of education on practice and infection rates.

*Deborah J. Ward. Nurse Education Today 31 (2011) 9-17*



# Effect of methodology in learning isolation and standard precautions of pregraduate nursing students

- Experimental design
- Universidad San Sebastian, Chile
- April to July 2015
- Group 1 (control) traditional methodology with lectures
- Group 2 (intervention) self learning on line and simulation

*María Soledad Kappes Ramírez*

*Tesis Magister en Ciencias Médicas mención IIH 2016*

*Universidad de Valparaíso*

# Conclusions of the thesis

- Both methodologies modify knowledge
- Better results in intervention group ( $p=0,002$ )
- Better results in practice (using simulation) in intervention group ( $p < 0,05$ )

*María Soledad Kappes Ramírez*

*Tesis Magister en Ciencias Médicas mención IIH 2016*

*Universidad de Valparaíso*

# Using Ozires, a Humanoid Robot, to Continuing Education of Healthcare Workers: a Pilot Study

- Robot as a tool in education of hand hygiene compliance (Ozires)
- short video-lecture presentations and own reports of the institution's data
- After the insertion of Ozires in three ICUs, the hand hygiene rate increased from about 36%, between January and July, to 65% in August-November/2016.



*Instituto de Engenharia e Tecnologia (IET), Centro  
Universitário de Belo Horizonte*



# Results of regional educational Initiatives





# Magíster en Infecciones Intrahospitalarias (IIH)



# Program

- Start in 2001
- Modular system semipresencial 2 years and tesis.
- Modules of 5 continuous days in april, july and november each year
- After each module students have to do a project in field (own facility)



# América Latina

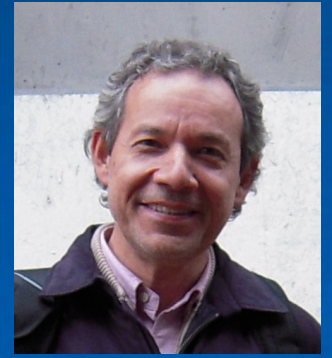
14 Countries  
2001-2015



# Results

- 160 situational diagnosis and interventional programs in NI
- 160 audits in nursing or medical practices
- 160 cost infection studies
- 160 systematic reviews in different topics
- 115 projects for thesis
- 80 graduate (49% nurses, 40% MD and 11% other)





**CINELA**  
Controlando  
Las Infecciones Nosocomiales en  
Latino América



# Preliminary results Project Cinela 2011



International Journal of Infection Control

[www.ijic.info](http://www.ijic.info)

ISSN 1996-9783

FROM AROUND THE GLOBE

## CINELA Project: Controlling Hospital Infections in Latin American countries - preliminary results

**Pola Brenner and Patricio Nercelles**

Department of Microbiology, Faculty of Medicine, University of Valparaiso, Valparaiso, Chile

doi: 10.3396/ijic.V7i2.013.11

# Cinela Project 2013

- 35 leaders
- 100 courses
- 17 countries
- 1600 attendants
- 85% aprobed
- Patronages
  - IFIC
  - Scientific societies
  - Universities
  - Ministry of health selected countries
  - Hospitals



# Survey of educative programs 2010-2016

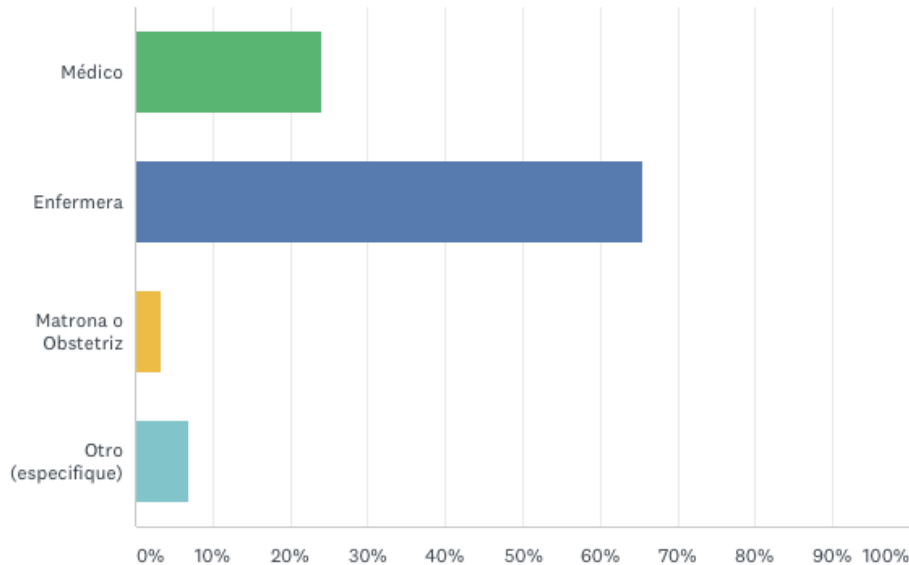
- Magister (29)
- Courses 80 hours and Cinela (71)

*Pola Brenner UV 2016*

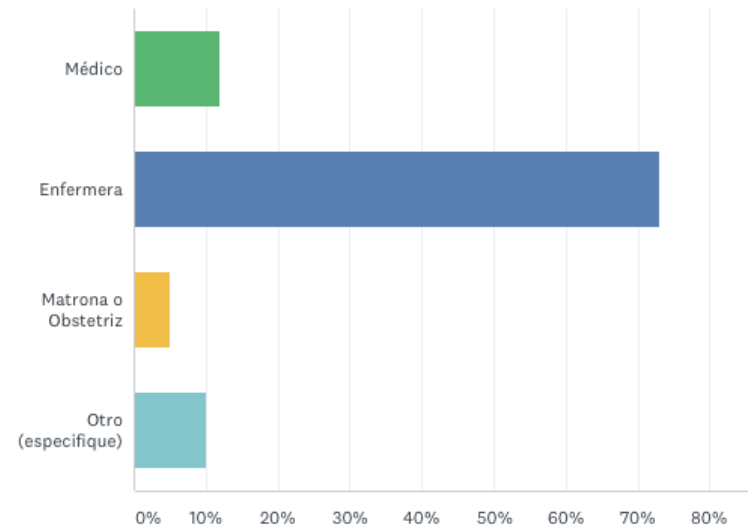


# Attendants

## Magister IIH

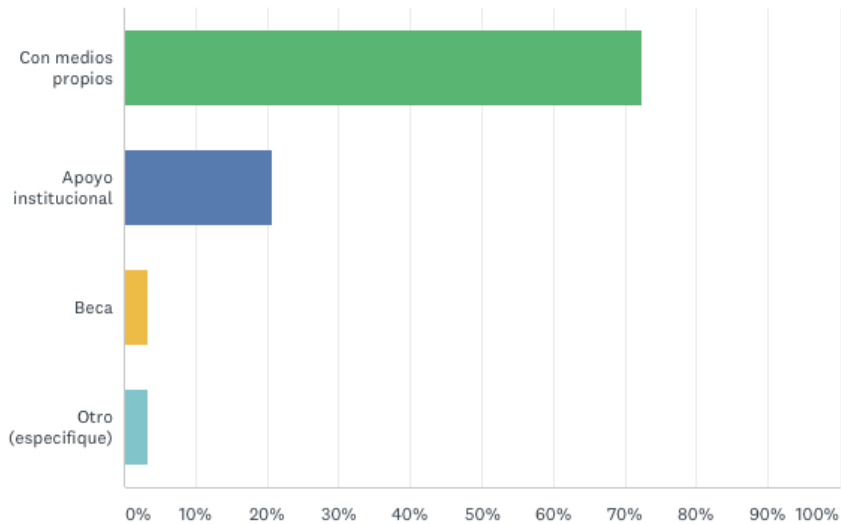


## 80 hours and Cinela

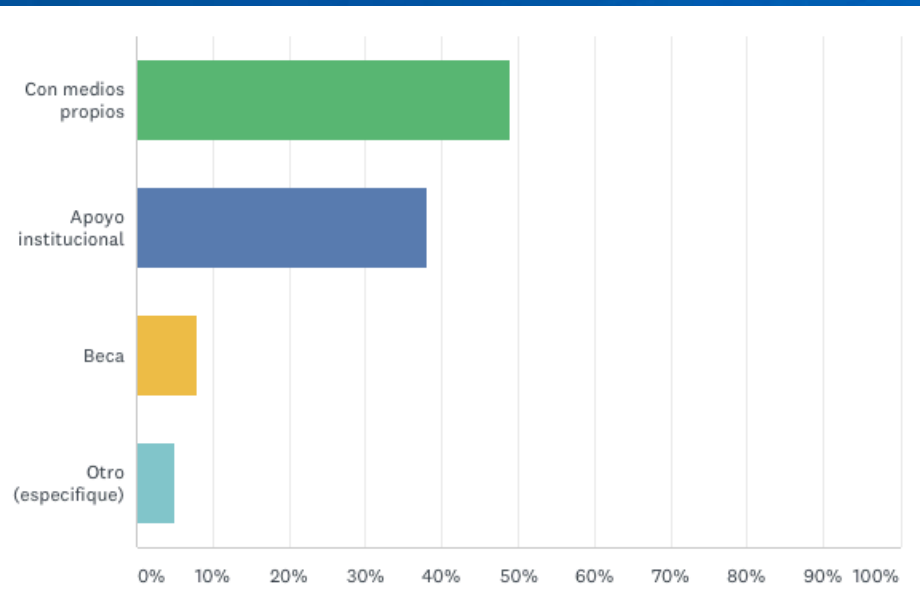


# Financing

## Magister IIH

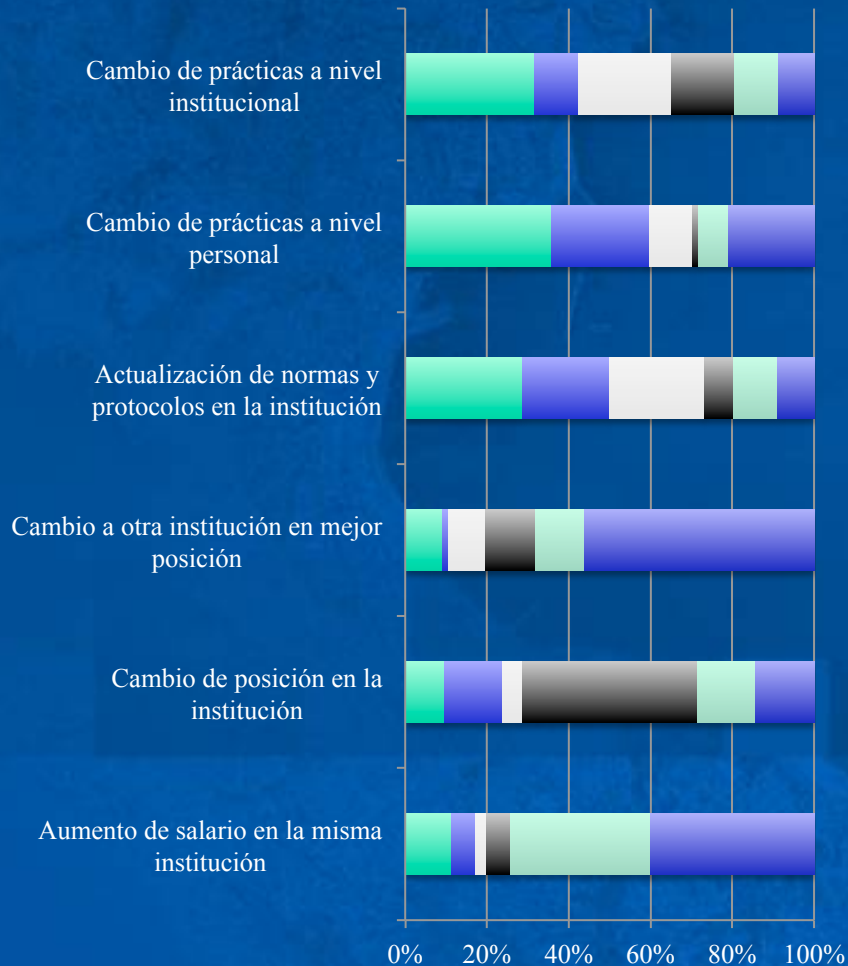


## 80 hours and Cinela

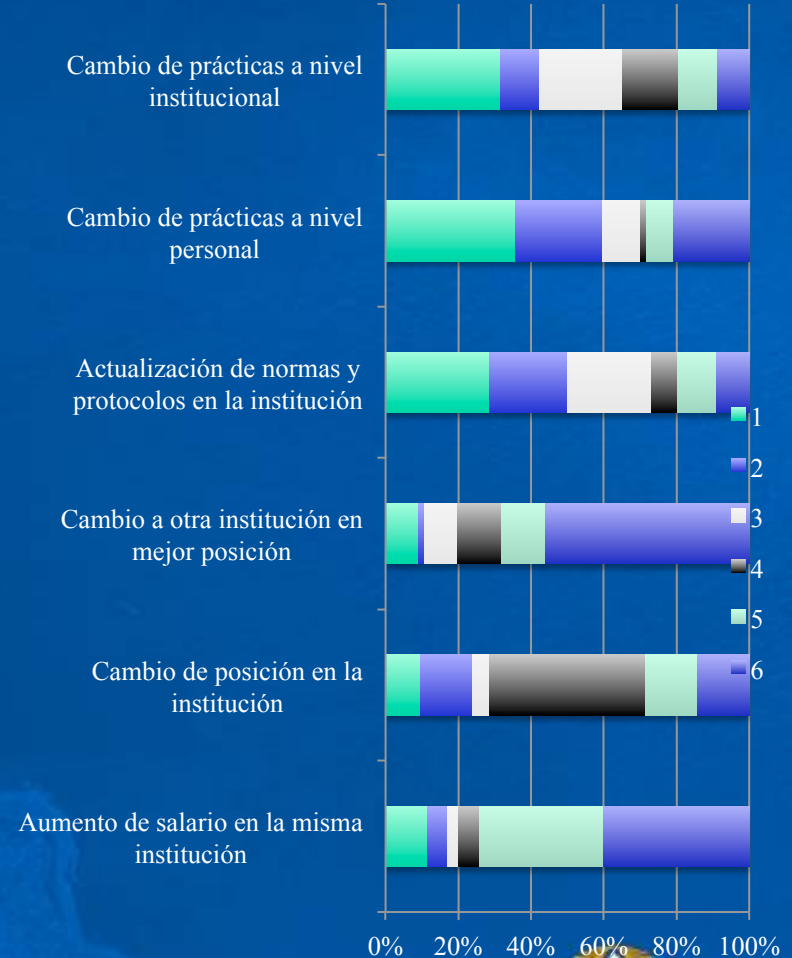


# Main product of the Program

## Magister

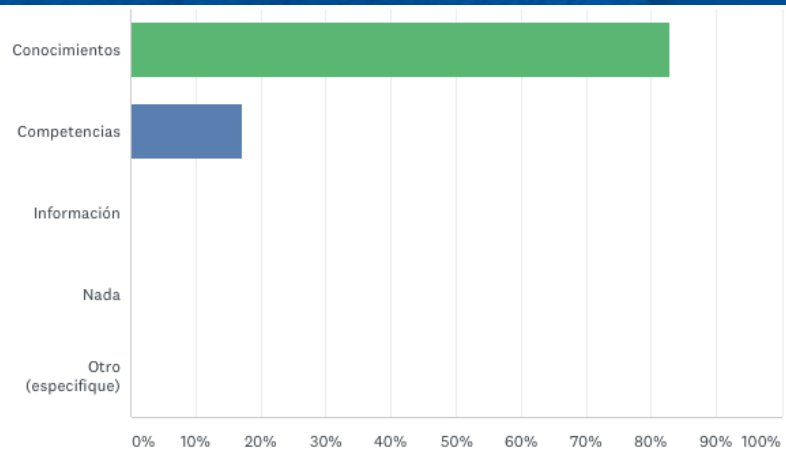


## 80 hours and Cinela

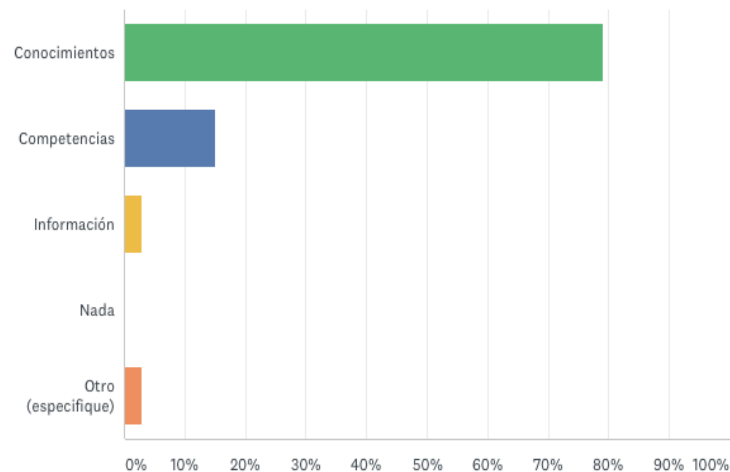


# What give you the program?

## Magister



## Cinela y 80 horas



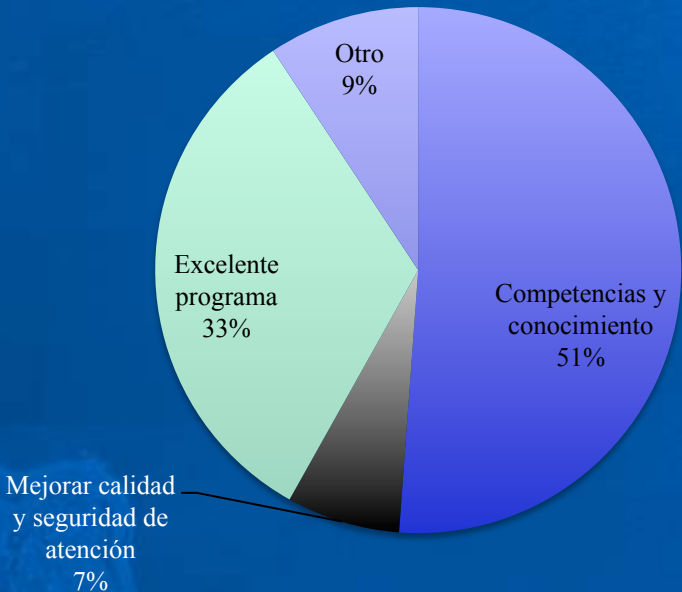


# Relevance

## Magister



## Cinela and 80 hours



# Conclusions of the survey

- Attendants majority nurses
- Majority auto financing. More support in courses than in Magister
- 80% in both programs consider that the main product was change of practices in their institutions
- The main relevance was knowledge and skills

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# Criteria for selection methodologies and programs (our experience)

- Institutional prestige
- Background of the teachers
- Popularity of the program
- Seriousness in timetable and products
- Evidence based and not opinions

# Some words of psicology of change



# Psicology of change

- The need of changing is an old topic. What is new is the speed and complexity
- Changes in structure and systems that in the past could delay decades today can be done in hours
- So the response and accommodation can be more traumatic

*IFIC noviembre 2003*

# Frequent mistakes regarding to change

- Changes are easy
- Believe that if people says "agree" they will change
- Information and knowledge by themselves generate changes
- Feel that a good plan is one that has rapid effect

# Learning as a graded sequence

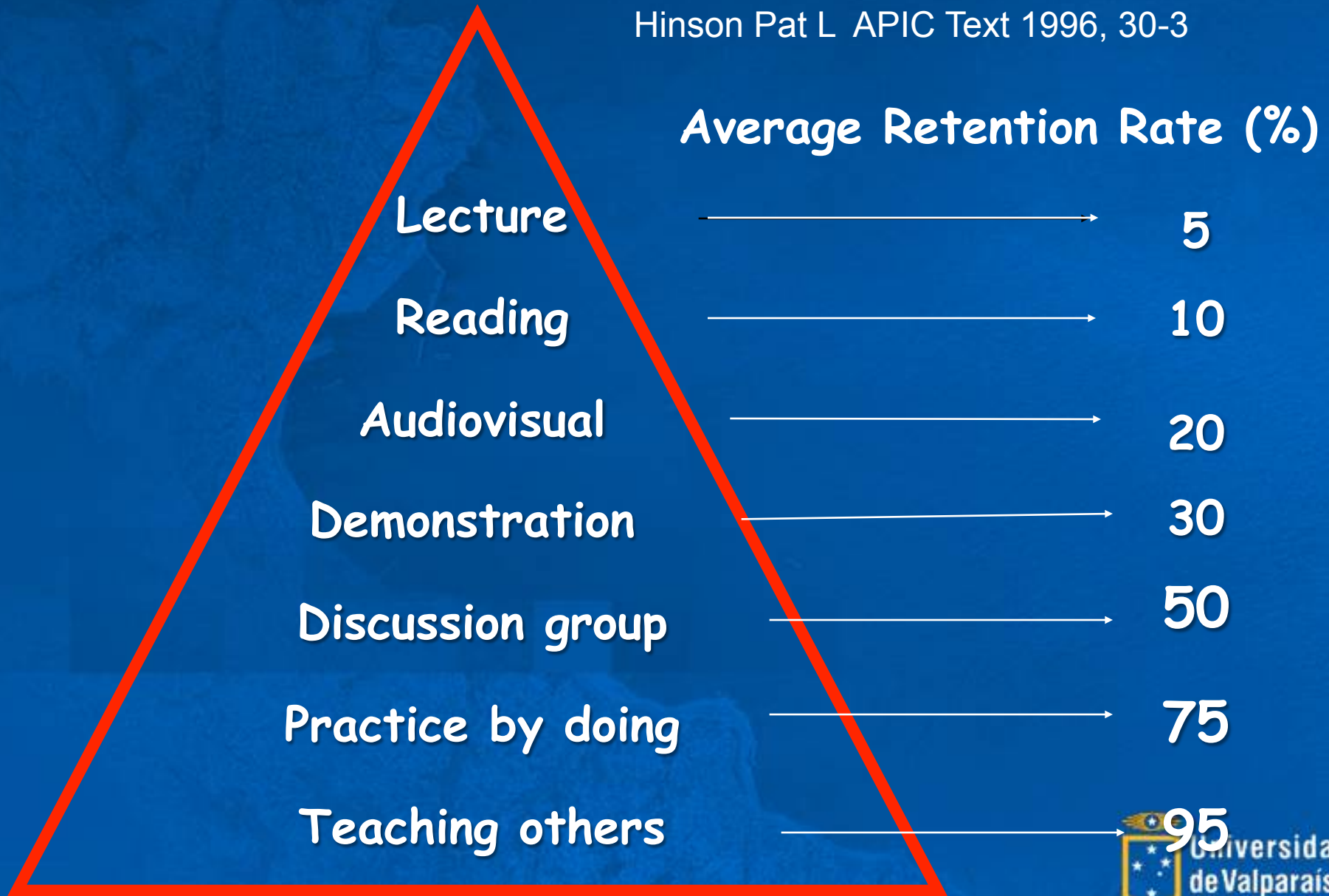
What you

- MUST know
- SHOULD know
- COULD know  
(nice to know)



# Teacher Methods and Learner Retention

Hinson Pat L APIC Text 1996, 30-3





# Teaching others 95% retention

- Wound care
- IV site procedures
- Hand hygiene
- Clean and sterile technique
- IC and the patient
- Preventing outbreaks

Improves critical thinking skills



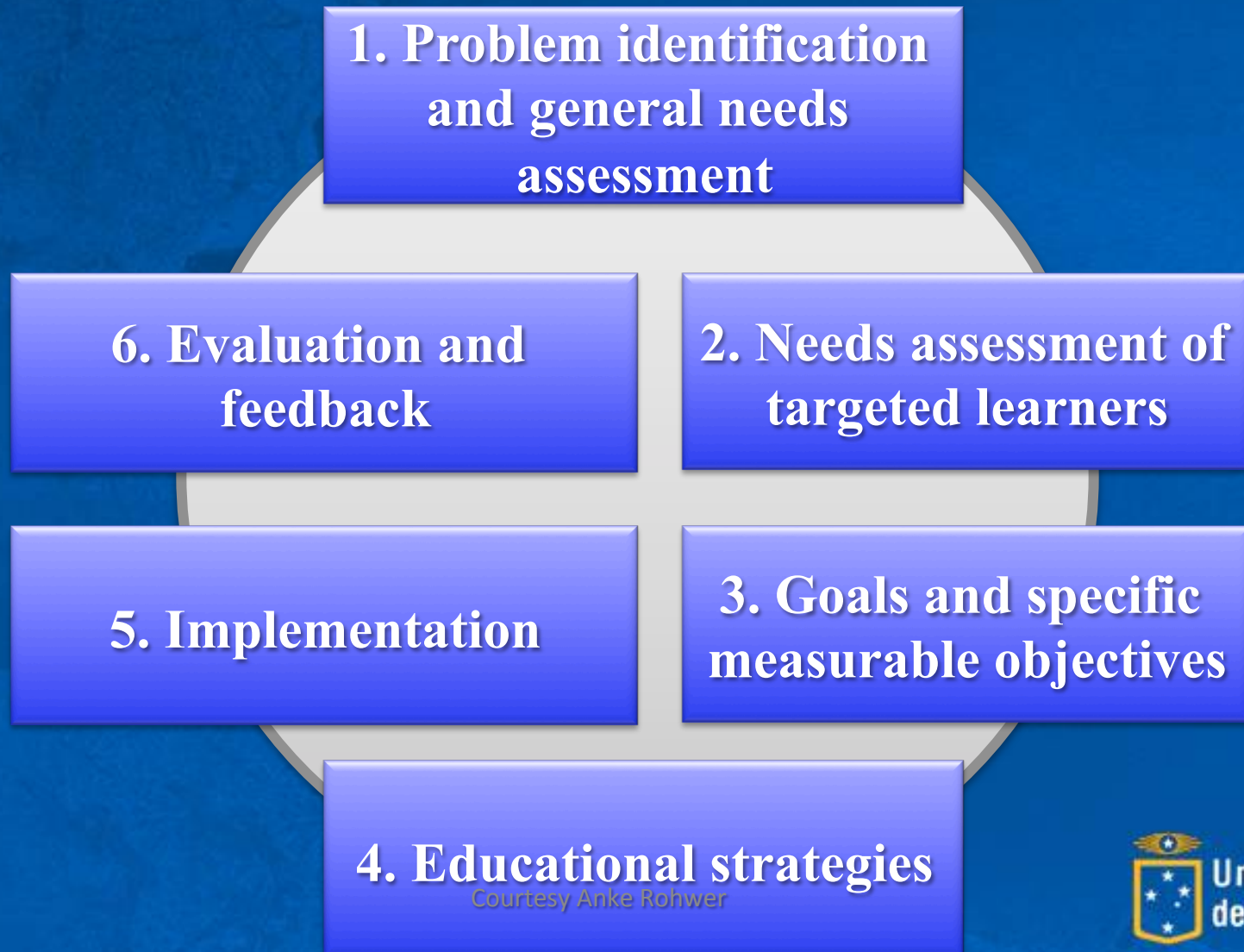
Tell me and I' ll forget.

Show me and I may remember.

Involve me and I' ll understand.

*Chinese Proverb*

# Curriculum development: Kern's six steps



Courtesy Anke Rohwer

# Barriers in learning process

- Always I have done in the same way
- Lack of information
- Lack of time
- Lack of interest
- Lack of incentives



# Finally how to be effective in education?

- Passive strategies in general don't have impact
- Combine strategies seems to be better approach to achieve changes
- Is crucial to consider who are the students when we plan an educative program
- Educate is complex and probably is difficult to achieve results without trained "educators"

# General conclusion

"Since in the literature the effect of different strategies is variable and without consistency in the results, always local impact must be evaluated considering the objectives"

Change does not  
take place until the  
learning has  
occurred.







*There are no shortcuts to  
any place worth going.*

—Beverly Sills



# Thanks you

