



ITK
2014

The logo consists of several overlapping circles in various shades of blue. The text is contained within these circles: 'ITK 2014' in a large blue circle, 'research workshop' in a medium blue circle, and 'Apr 9 2014' in a small light blue circle. There are also two small white circles at the bottom left.

*research
workshop*

Apr 9
2014

Diagnosing nursing students' errors in medication calculation

Designing a method based on the 4 Cs teaching model for analysing mathematical proficiency

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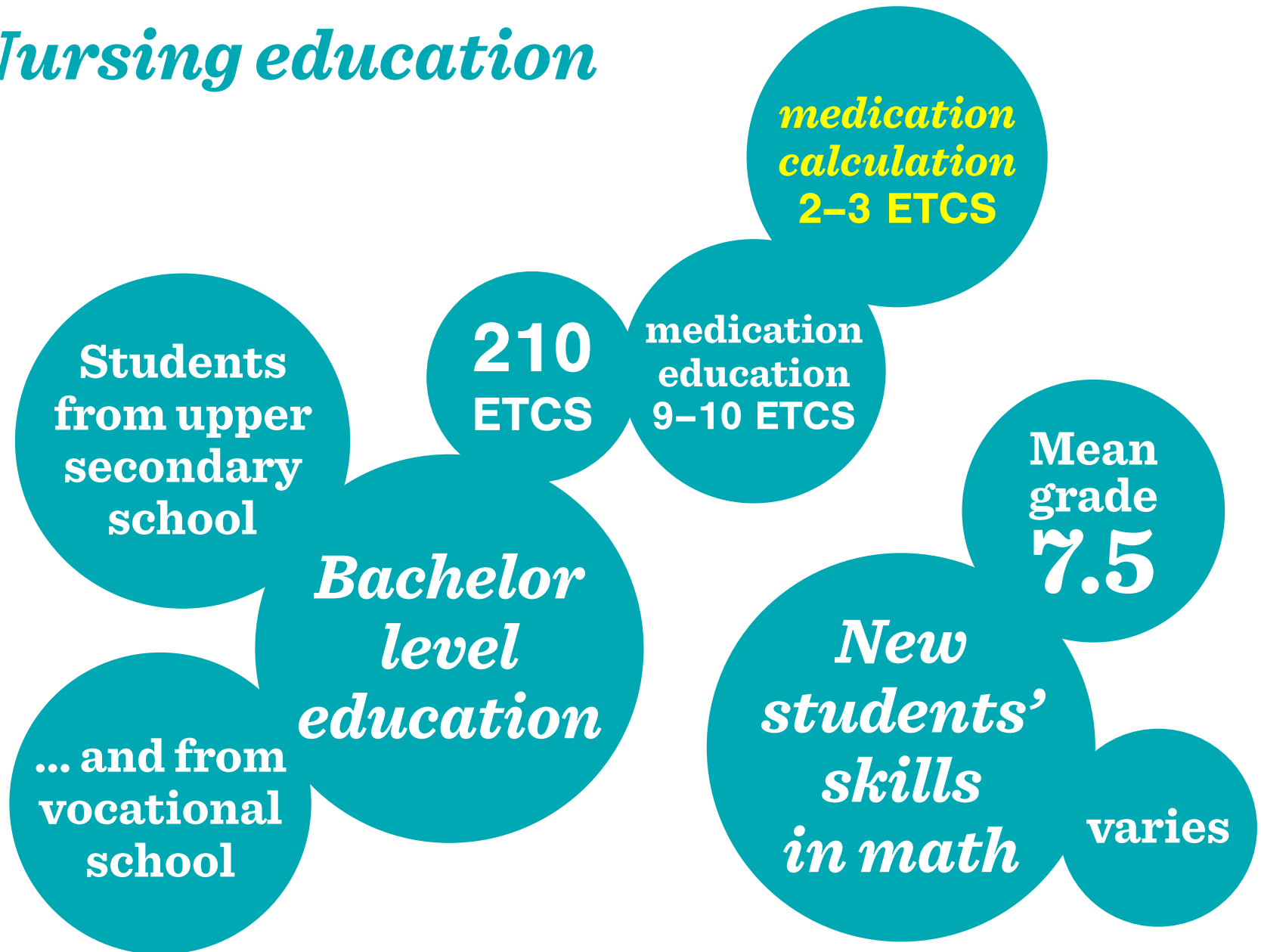
In Kalmar, Sweden

On February 24th, 2002, a baby was born. The baby showed some signs of seizures, and an anti-epileptic drug was started three days later. The seizures continued, and the drug was changed in May to Xylocard-infusion with the concentration 4 mg/ml.

The nurse prepared a new infusion. An error occurred, and the concentration of the infusion was 40 mg/ml. The baby died.



Nursing education





Challenges

**Work-
force
mobility**

**Learning
difficulties**

**Dosage
errors on
the rise**

**Outdated
learning
materials**

**Theory
&
practice**

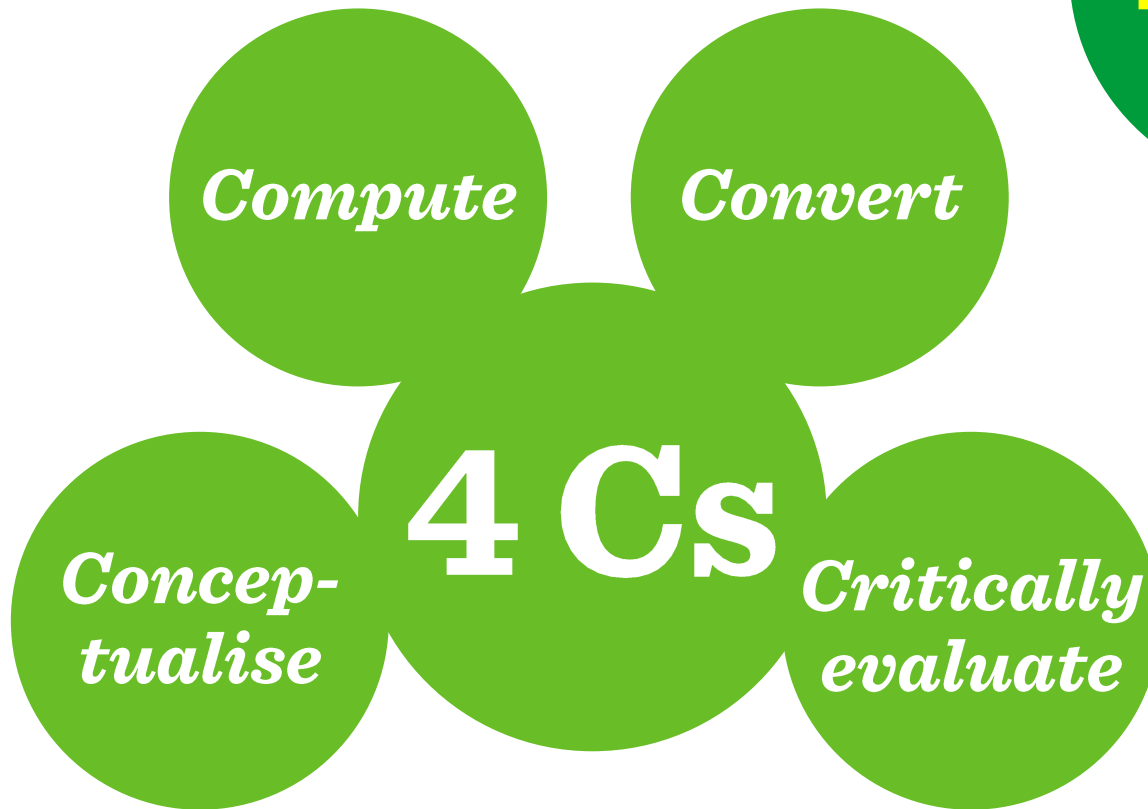
**Flexible
studies**

**Proficiency
monitoring
&
certification**

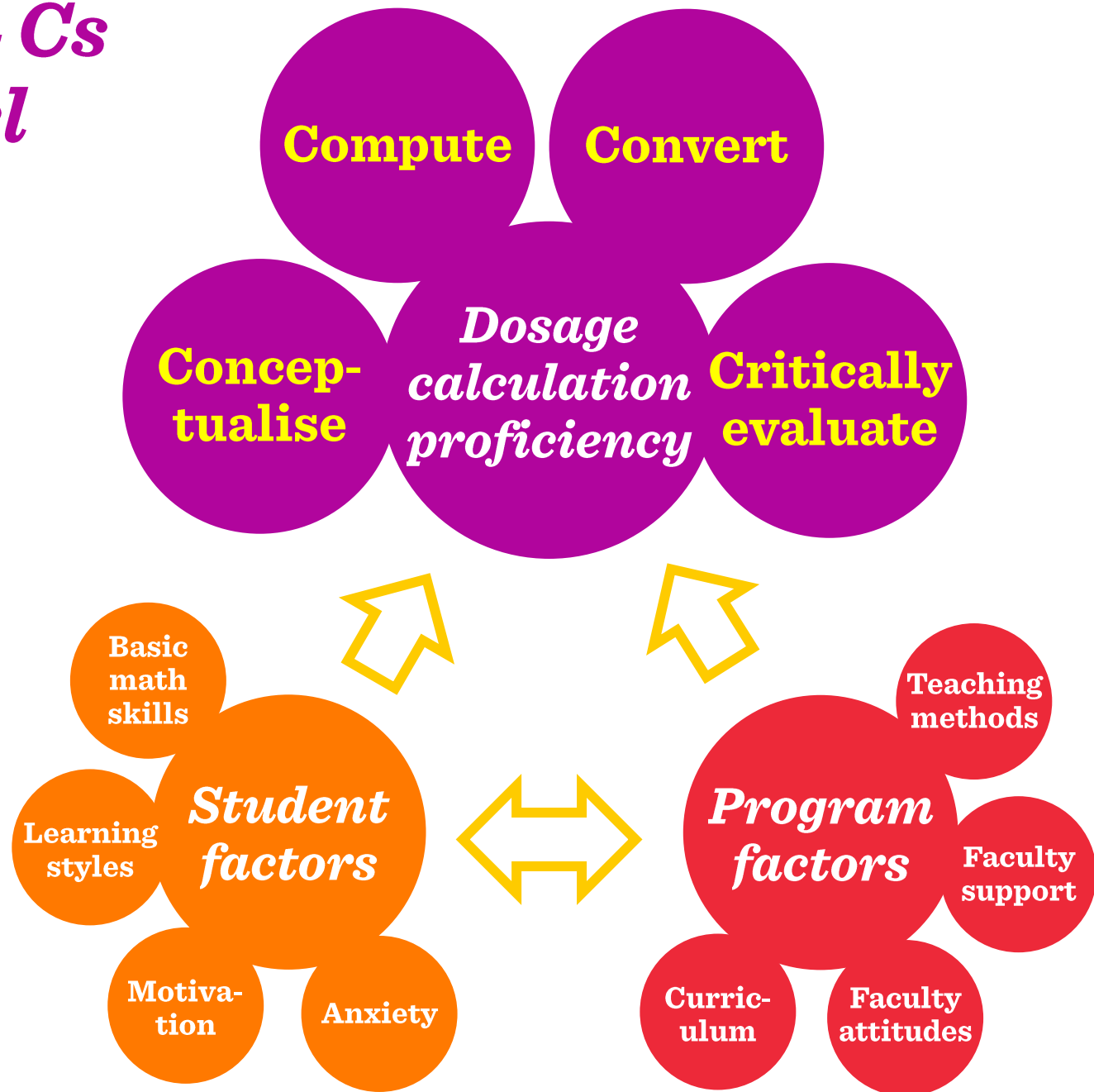
Medication calculation process & proficiency in Arcada



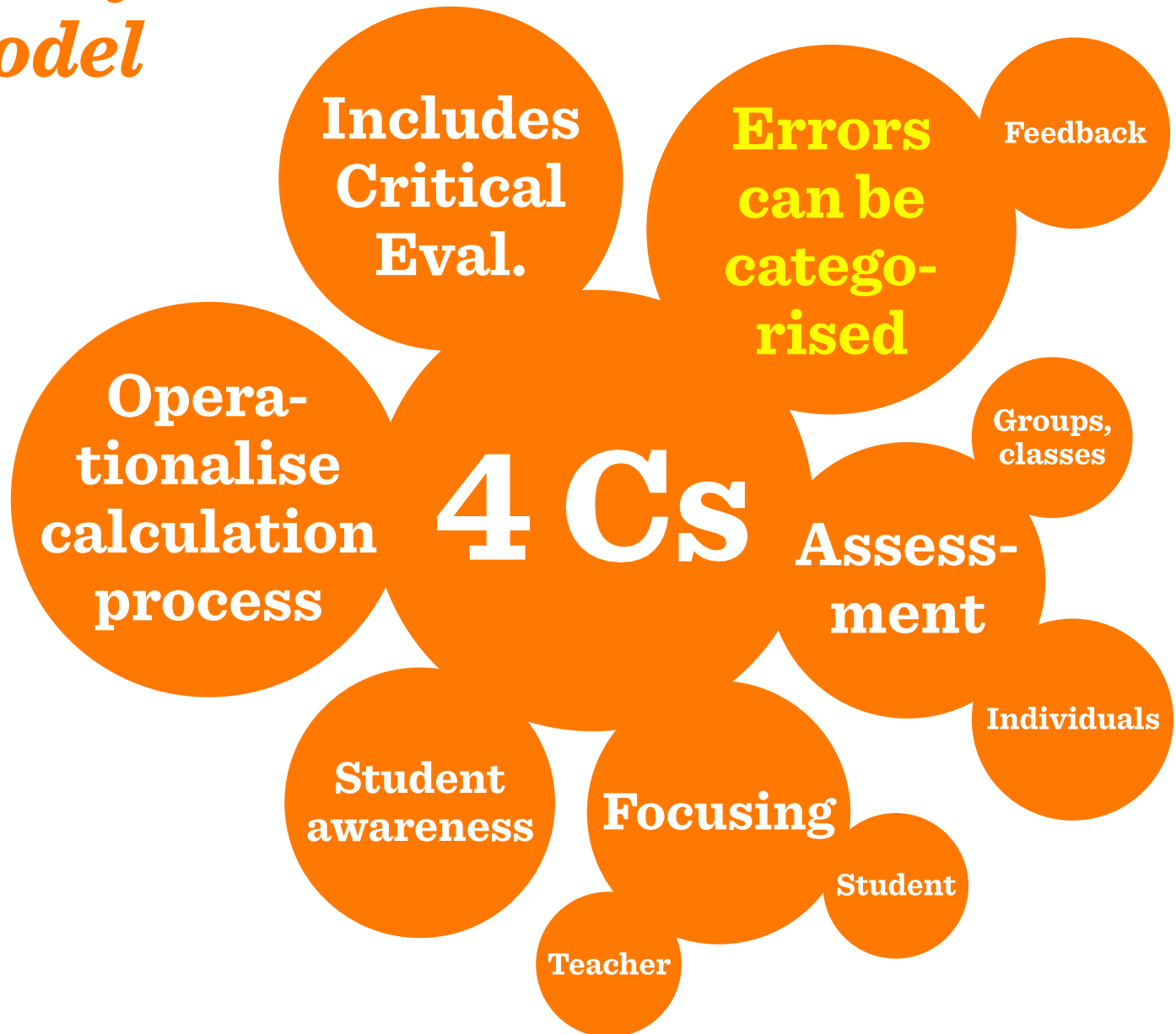
100 %



The 4 Cs model



Benefits of the 4 Cs model



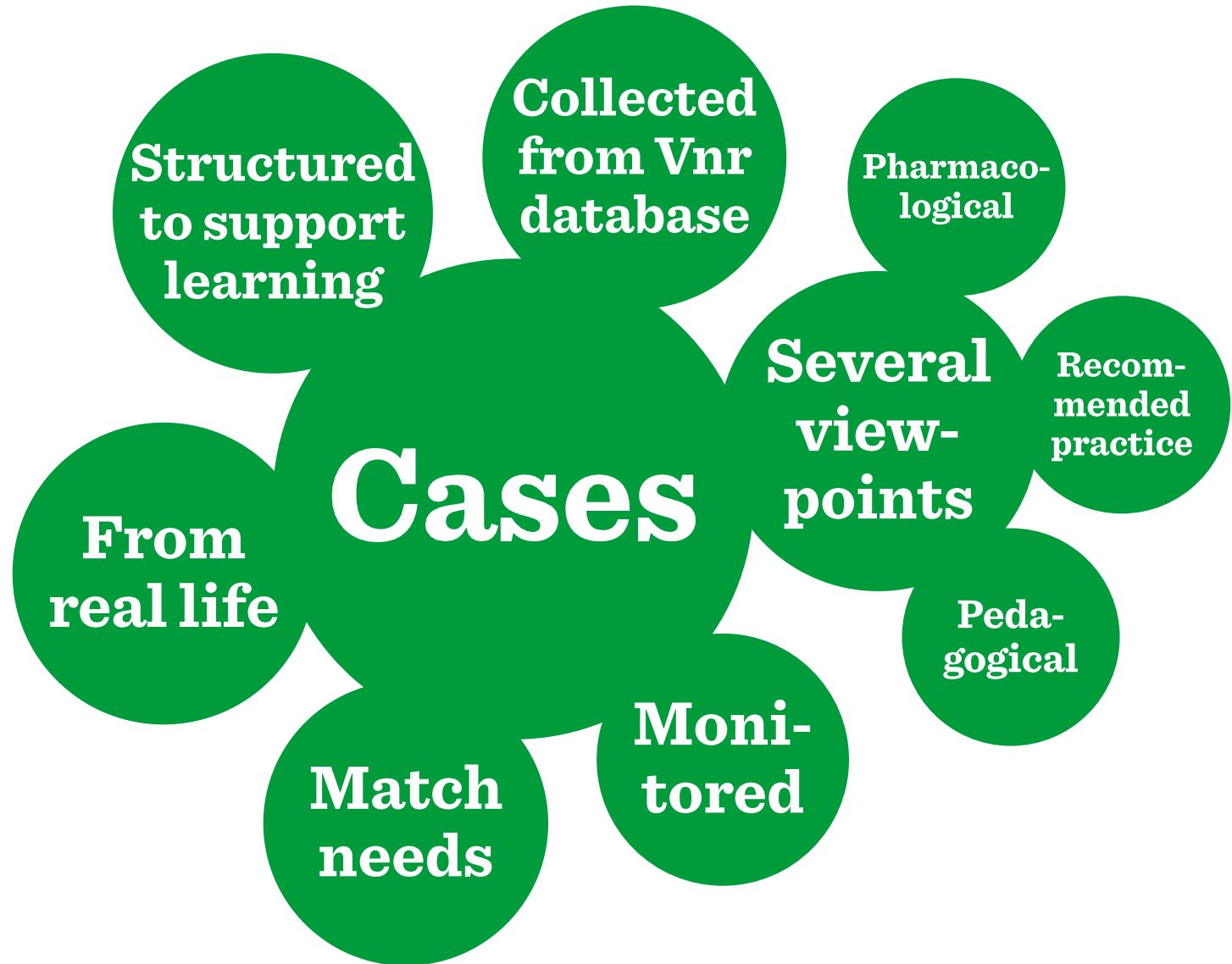


The learning environment Sigma





Authenticity & quality





ALOITA HARJOITTELU TENTTI OMAT TIEDOT HALLINTA KIRJAUDU ULOS

Harjoittelu - 3/5

1
2
3
4

Tausta: Keuhkosityöpää sairastavan potilaan kivunhoitoon käytetään oraaliliuosta.

Lääkemääräys: Oraaliliuos OxyNorm® 15 milligrammaa per os.

Lääke: OxyNorm® 10 mg/ml oraaliliuos (oksikodonihydrokloridi).

Laskutehtävä: Kuinka monta ml annat potilaalle?

Vastaus1:

Pyöristys: Ei

Lähetä



Laskutoimitus

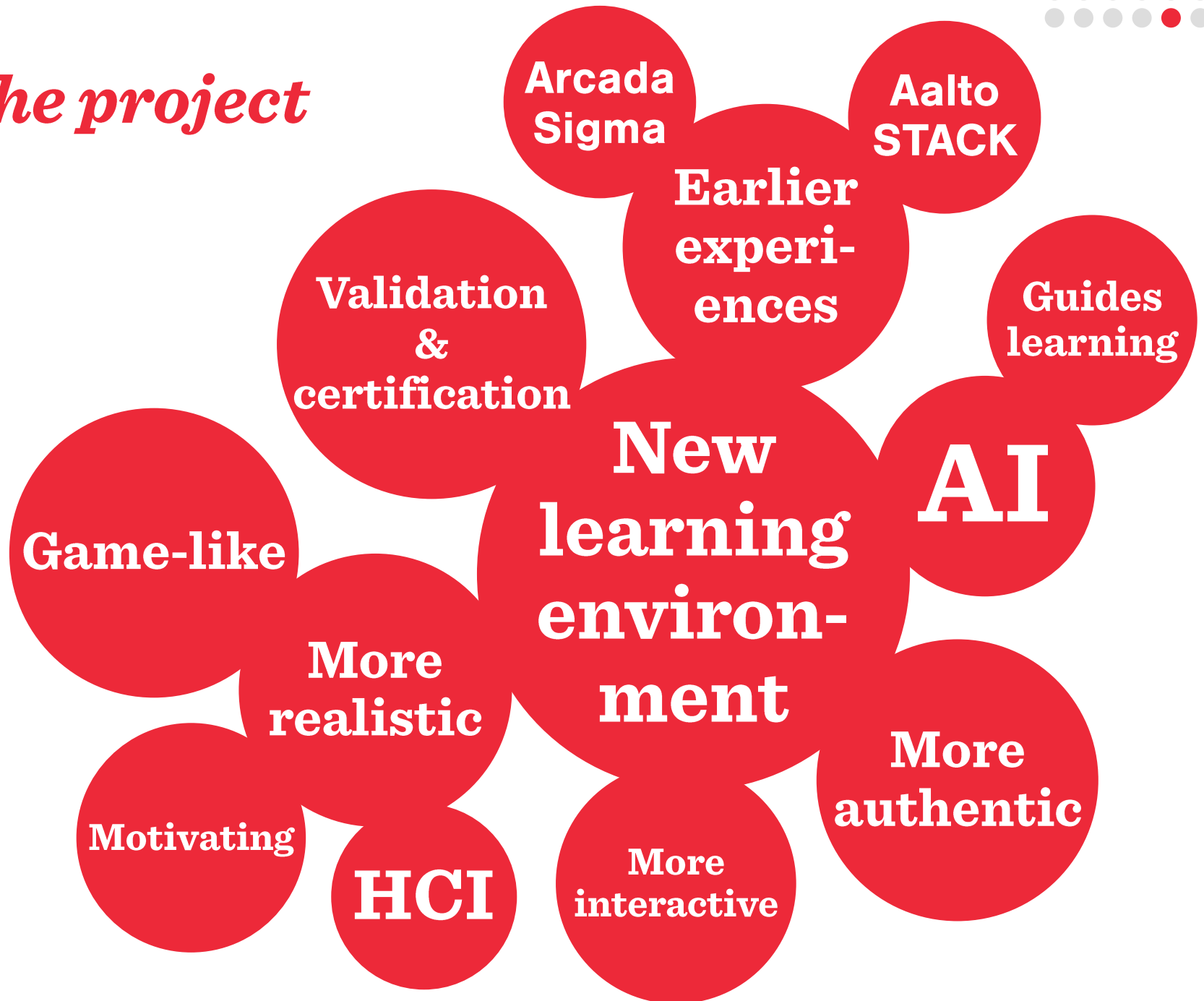
☐ Flashsovellus (BETA) ☒ Tekstikenttä

$$\begin{array}{r} 15 \text{ mg} \\ \hline 10 \text{ mg/ml} \end{array} =$$
$$\begin{array}{r} 15 \text{ ml} \\ \hline 10 \end{array} = 1,5 \text{ ml}$$

strategy

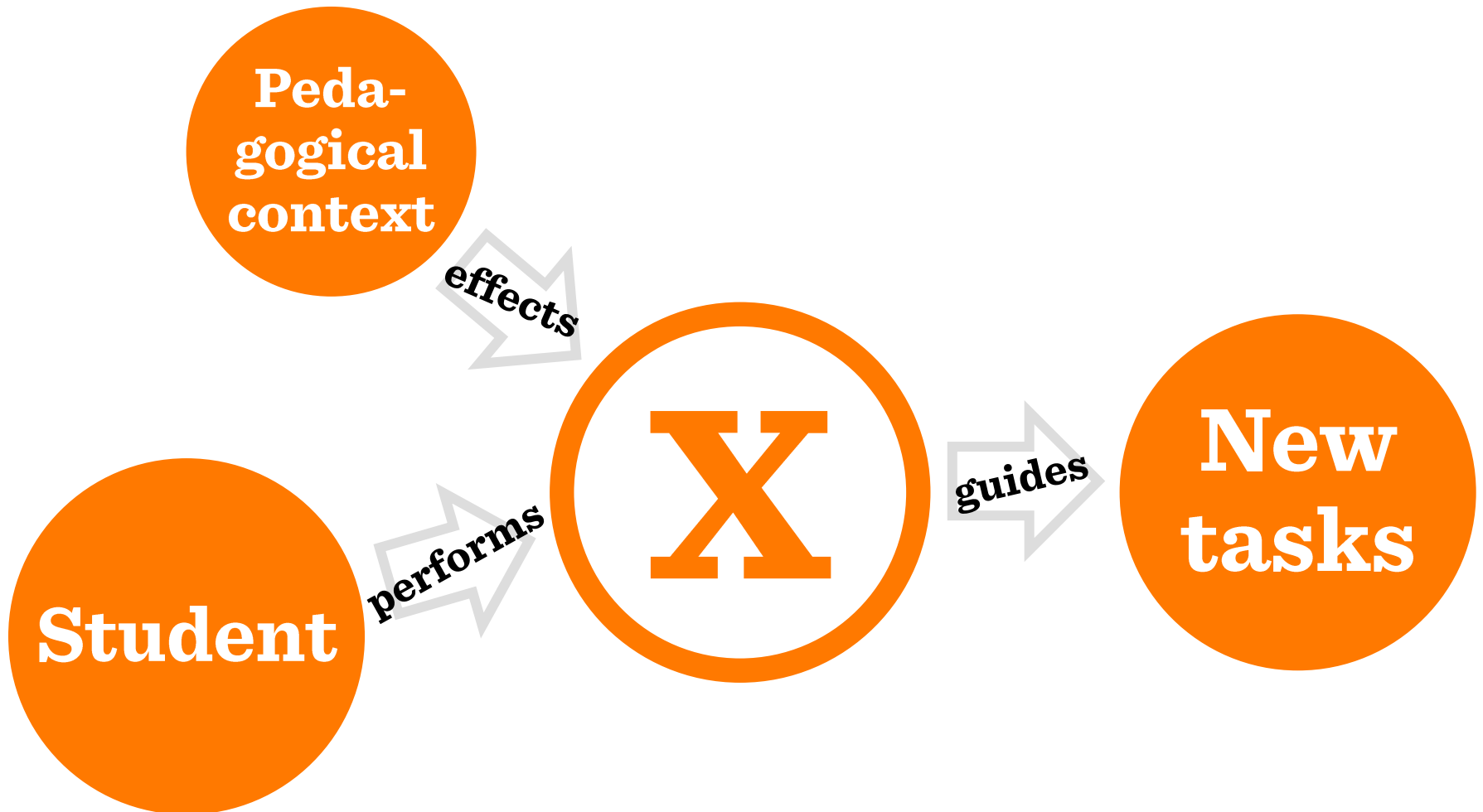


The project





LE guides learning process



Designing the (X)



4 Cs

**Learning
process**

1

**Test
categori-
sations**

**Error
analysis**

2

Clusters

**Teachers'
categorisa-
tions consis-
tent?**

3

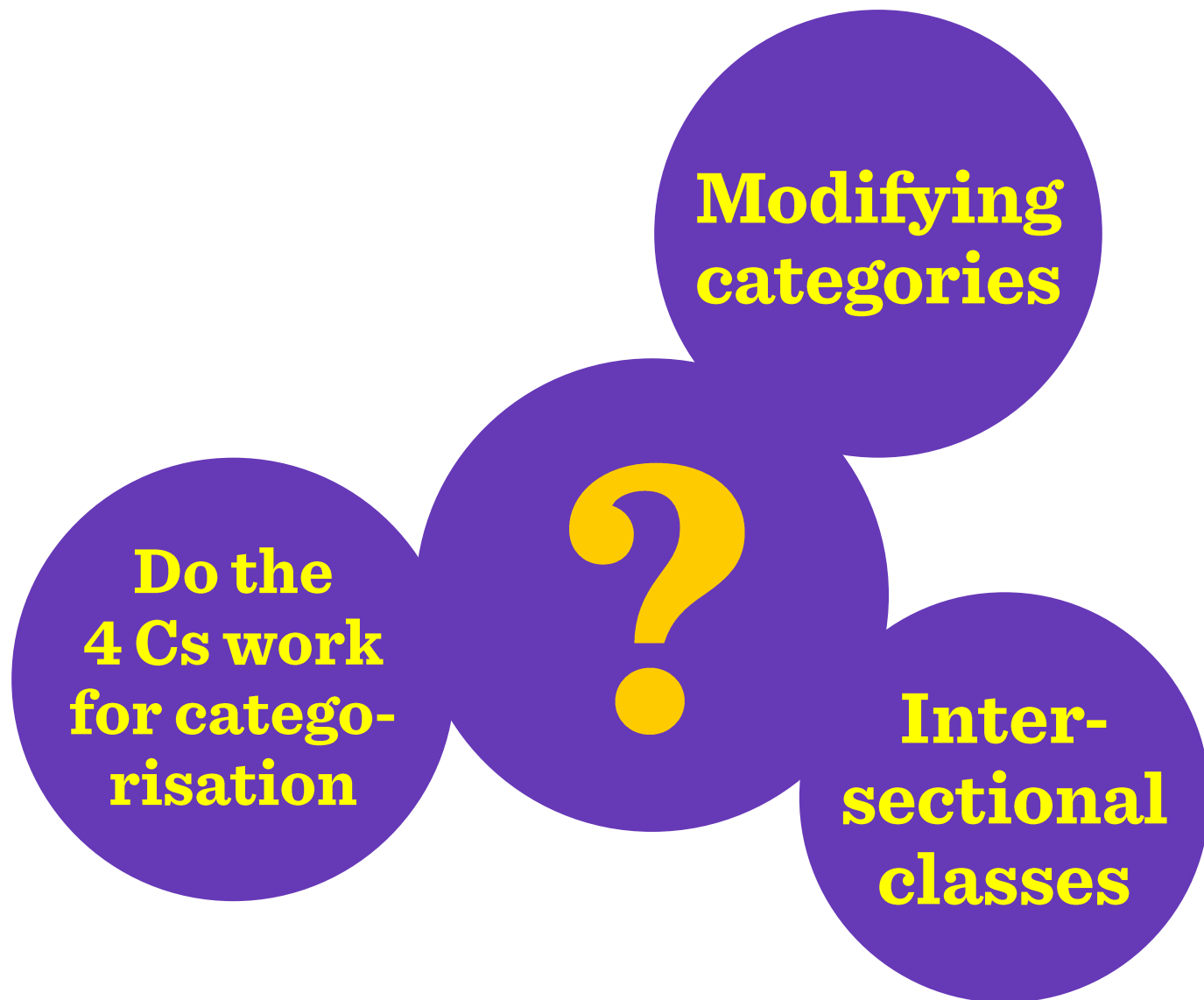
**Hidden
vari-
ables**

**Can it be
done by a
computer?**

4



Qs



Method, *k*-means

