Found in translation – (oppgave for GLU1-7 matematikk studenter)

Recently Norwegian Olympic team ordered 10 times more eggs than they needed (https://www.nrk.no/norge/ol-kokkene-bestilte-1500-egg_-fikk-15.000-etter-sprakbom-1.13898349)

It was described as being "lost in translation". One of the reasons given was because of the similarity in symbols but it may also been that place value could be represented differently. For example, grouping numbers in threes. For example, one million, three hundred and forty three thousand, two hundred and ninety-eight is in digits 1 343 298 showing that in many Western number systems we group in threes. In languages, which draw their numbering system from Chinese, the place value groups are in 4s. The previous number could be represented as 134 3298.

Rather than seeing these differences as problems, they provide opportunities to discuss mathematical concepts through looking at how the representations are not transparent. Questions can be asked of the preservice teachers about when the differences might make a difference (such as the case of too many eggs) and what situations could make one or other formatting of numbers useful.

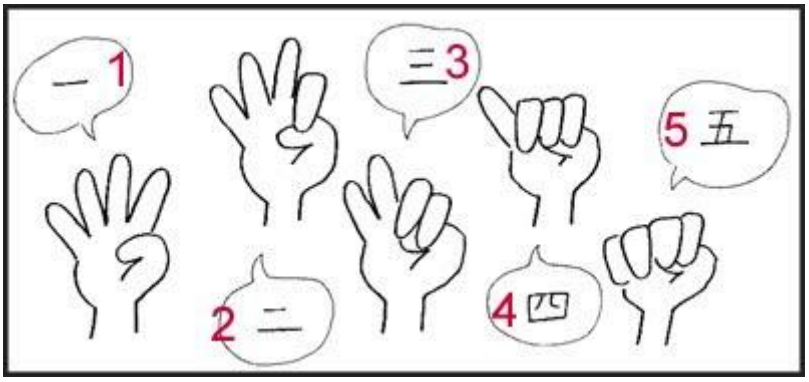
Another example of where differences can become opportunities for discussions is Japanese finger counting. From https://wkdhaikutopics.blogspot.no/2010/06/counting-with-fingers.html

Here is how the Japanese count with one hand,usually the left.
Palm facing your face, all fingers stretched out is the start.

ONE: Fold your thumb towards the palm of your hand.
TWO: Fold your pointer finger over the thumb.
THREE: Fold your middle finger over the thumb, joining the pointer.

So your three looks like three fingers folded, not sticking out !
Surprise!

FOUR: the ring finger (called "medicine finger" in Japanese), is folded.
FIVE: the little finger is folded, so NONE is sticking out.



The understanding of zero is quite complex. Seeing the hand representations of zero in different forms can provide opportunities for what is being shown and what the underlying concepts are.

The preservice teachers could investigate a number system (including historical ones mentioned in their QED book). They can prepare a presentation (individually or in groups) that identifies the mathematical concepts that these number systems raise/are connected to and discuss the advantages and disadvantages compared to the how the Norwegian læreplan anticipates it should be presented. In this discussion, the representation of the mathematical ideas should be the focus but also the idea that mathematics provides opportunities to learn from each other.