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# **Integration of Educational Technology at Five European Universities During the First COVID-19 Lockdown:** A Comparative Study

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# Table of contents

- 
- 1 Educational Technology to Close the Gap
  - 2 Attitude and Self-Efficacy as Key Factors
  - 3 Research Questions
  - 4 The CRTS-Study
  - 5 Conclusion
-

# Educational Technology to Close the Gap

- Educational technology includes a variety of digital tools and applications.
- Educational technology is a means to achieve instructional goals (Ross et al., 2010).
- It should at any point improve the quality of teaching, by...
  - Increasing the intensity of learning, supporting active learning,
  - Supporting individualized / personalized learning, and
  - Supporting online social learning (Getto, 2020).
- According to studies, educational technology has a positive effect on learning outcomes (Schmid et al., 2014).
- During COVID-19: Online teaching ≠ emergency remote teaching.

# Attitude and Self-Efficacy as Key Factors

- **Attitude** «refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior in question» (Ajzen & Madden, 1980).
  - *Positive attitude towards educational technology influences the use of it* (Amhag et al., 2019; van der Spoel et al., 2020; Semerci & Aydin, 2018).
- **Self-efficacy** is defined as the teacher's belief or confidence in their ability to foster student learning outcomes (Tschannen-Moran et al., 1998).
  - Teacher with high self-efficacy beliefs can endure difficult times and ensure quality of teaching (Bandura, 1986).
  - Teacher self-efficacy helps to take new educational technology up and to adapt for the switch to online teaching during COVID-19 (Kaqinari et al., accepted).

# Research Questions

How does the use of educational technology vary by lecturers at different universities?

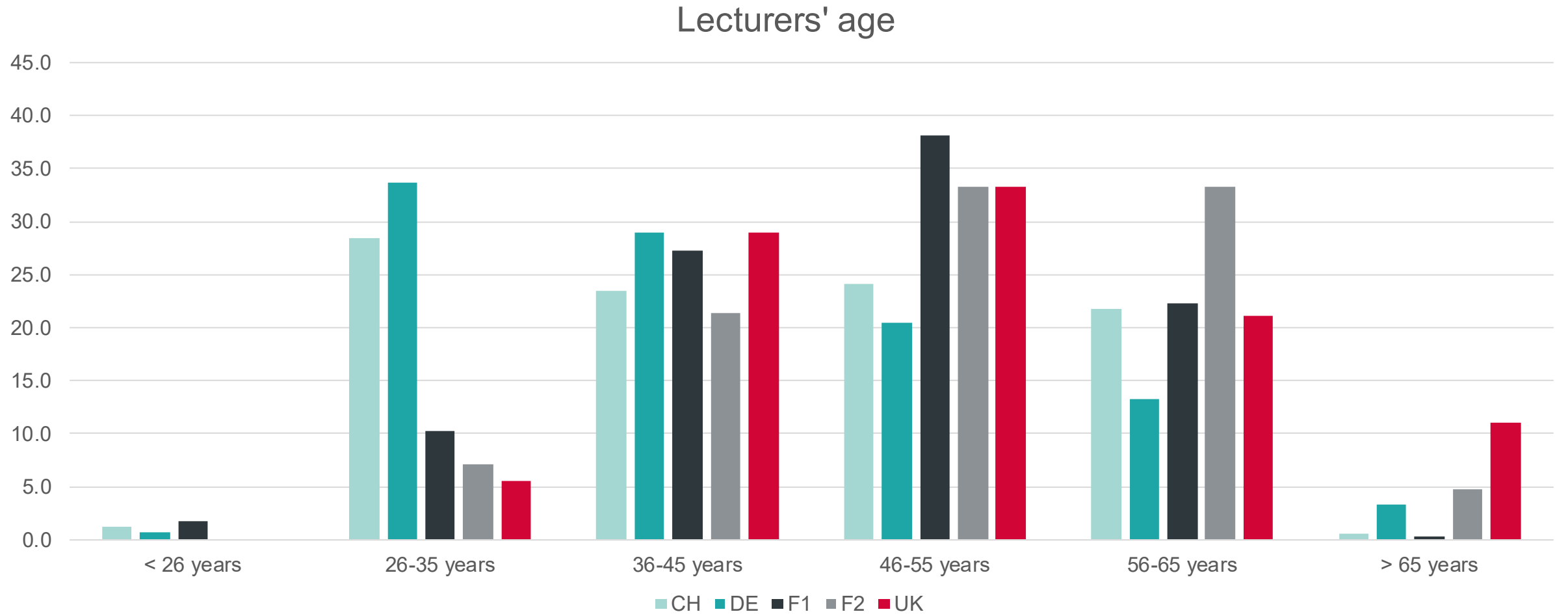
How important are experience, attitude, and teaching self-efficacy for the use of educational technology for emergency remote teaching?

# The CRTS-Study: Instrument and Sample

- The trilingual questionnaire comprised items regarding...
  - educational technology use before and during the lockdown.
  - attitude towards educational technology and self-efficacy in online teaching.
  - experiences during the coronavirus-related teaching situation.

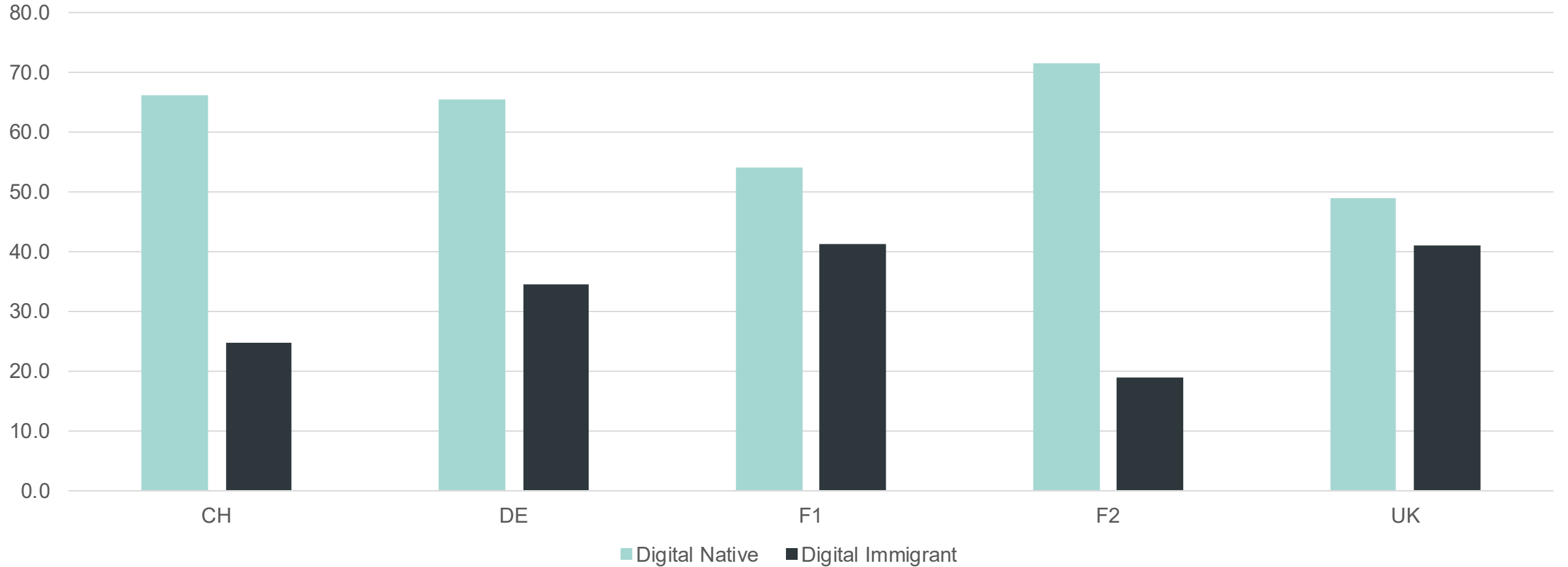
| University location | N          | %            |
|---------------------|------------|--------------|
| Switzerland (CH)    | 162        | 20.0         |
| Germany (DE)        | 154        | 19.0         |
| France 1 (F1)       | 360        | 44.4         |
| France 2 (F2)       | 44         | 5.4          |
| United Kingdom (UK) | 90         | 11.1         |
| <b>Total</b>        | <b>810</b> | <b>100.0</b> |

# The CRTS-Study: Sample



# The CRTS-Study: Sample

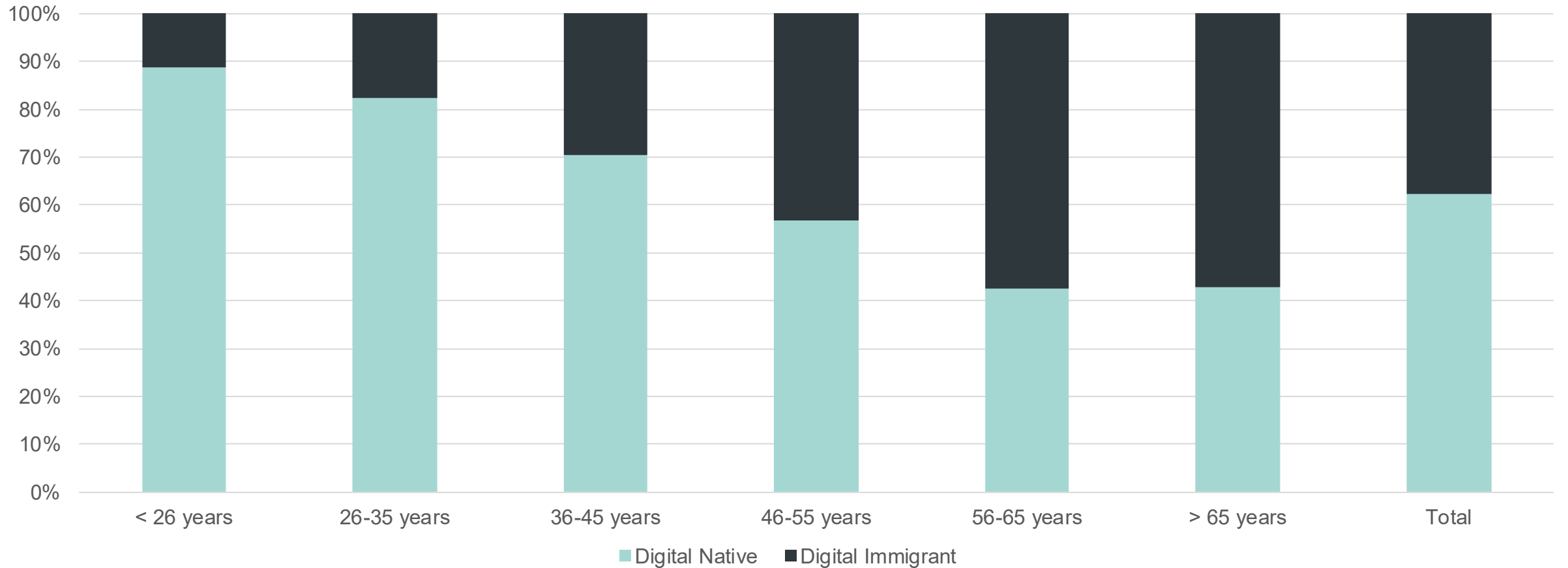
## Digital Natives vs. Digital Immigrants





# The CRTS-Study: Sample

## Age categories of Digital Natives and Digital Immigrants



# The CRTS-Study: Sample

## Lecturers' gender

Female Male Other



## Lecturers' discipline

STEM Non-STEM

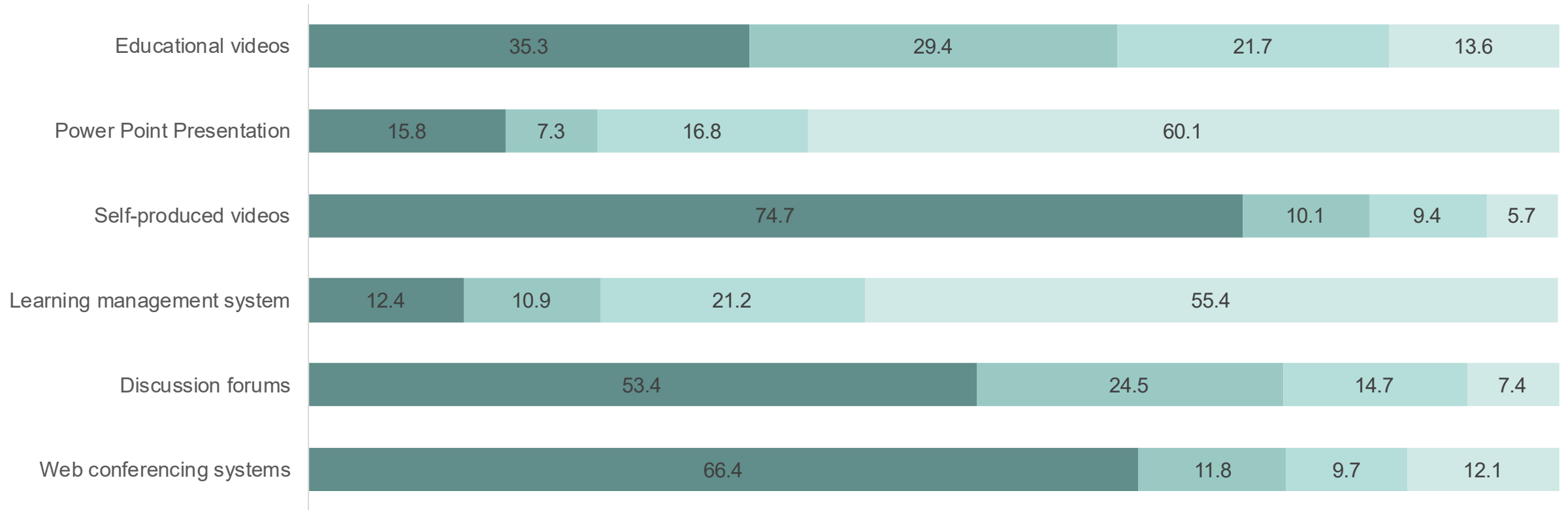


# The CRTS-Study: Results

## How does the use of educational technology vary by lecturers of different universities?

### Usage of digital tools **before** the pandemic

■ Not at all   ■ To a little extent   ■ To a moderate extent   ■ To a large extent

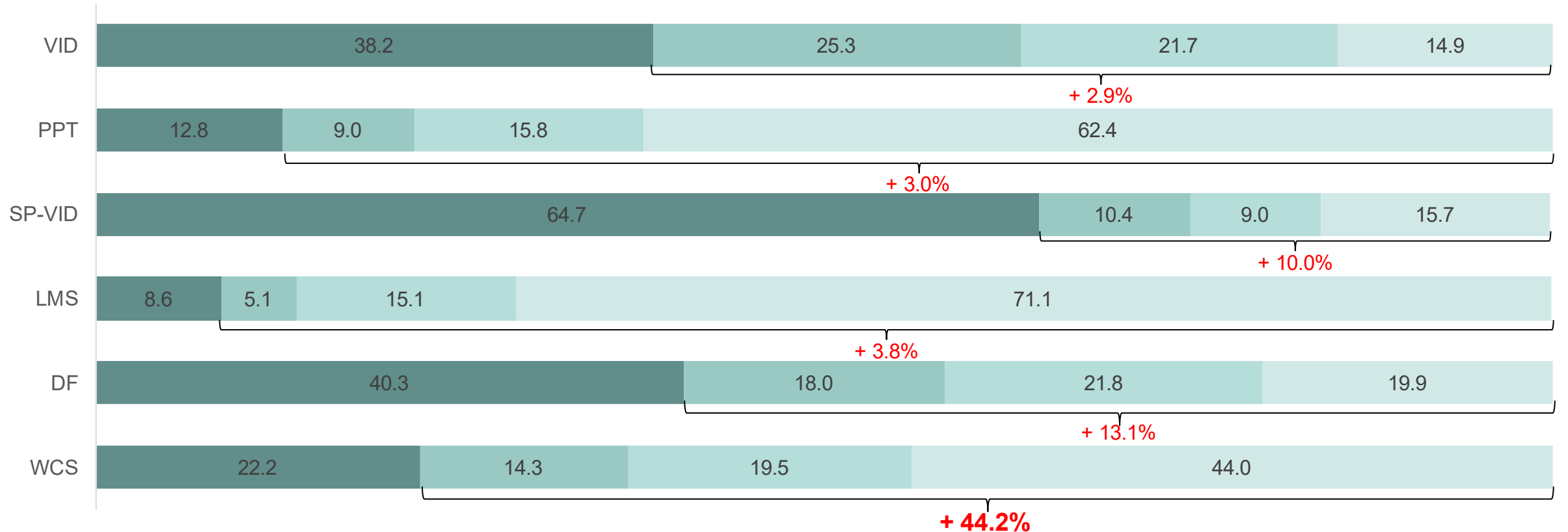


# The CRTS-Study: Results

How does the use of educational technology vary by lecturers of different universities?

## Usage of digital tools **during** the pandemic

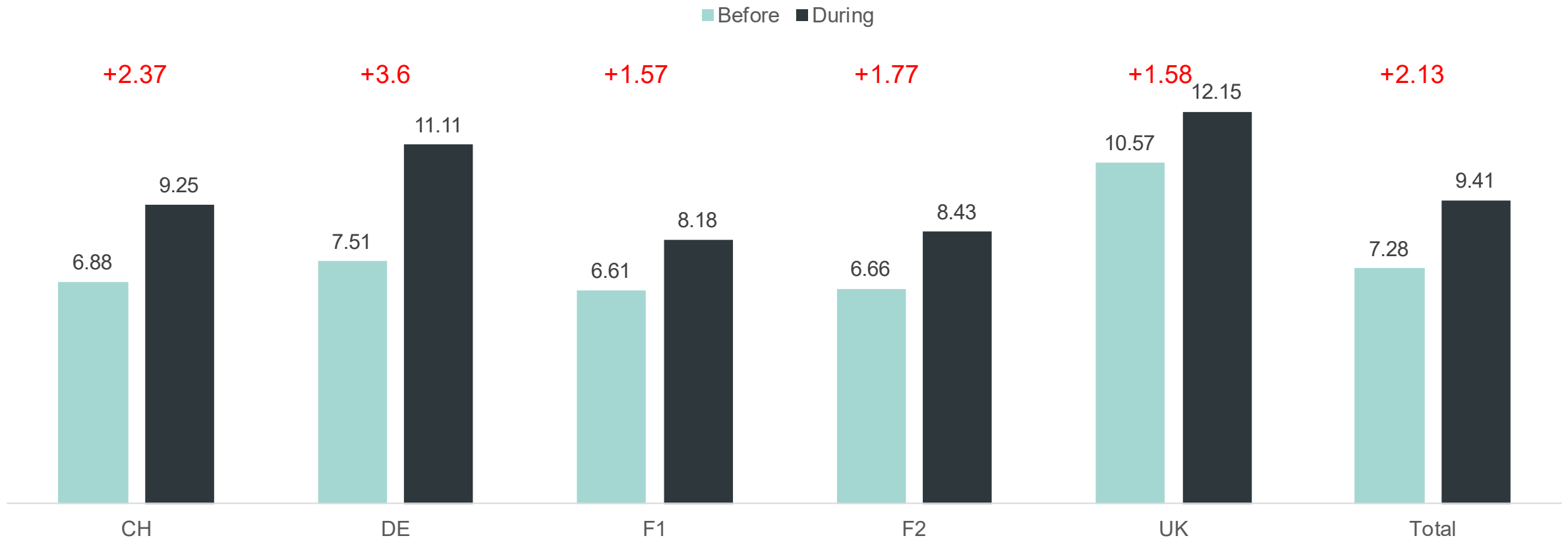
■ Not at all ■ To a little extent ■ To a moderate extent ■ To a large extent



# The CRTS-Study: Results

How does the use of educational technology vary by lecturers of different universities?

Sum score of educational technology use per country  
(min = 0, max = 18)



# The CRTS-Study: Results

What is the role of experience, attitude, and teaching self-efficacy for the use of educational technology for online teaching?

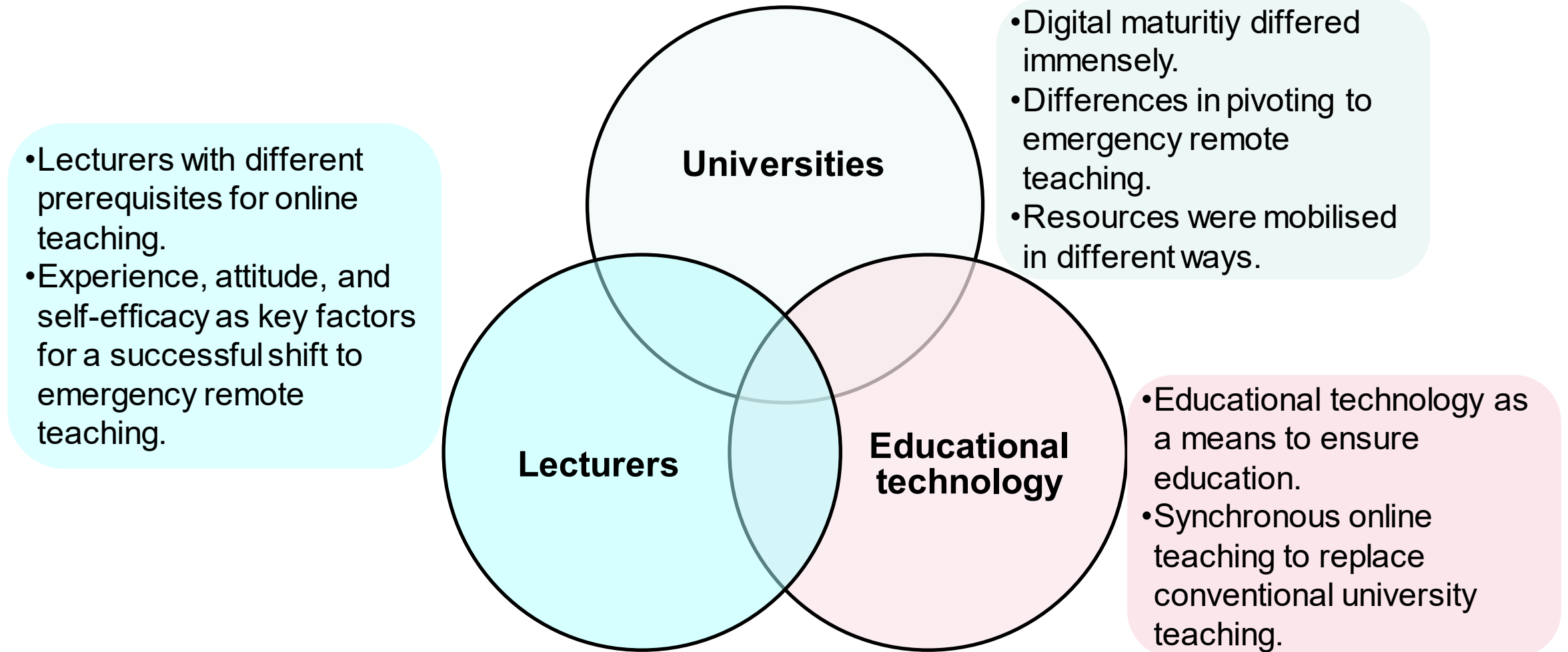
| Correlation matrix | M (SD)         | 1           | 2           | 3           | 4           |
|--------------------|----------------|-------------|-------------|-------------|-------------|
| 1<br>EdTech during | 9.41<br>(3.79) | -           |             |             |             |
| 2<br>Attitude      | 2.76<br>(0.84) | <b>.30</b>  | -           |             |             |
| 3<br>Self-efficacy | 2.96<br>(0.56) | <b>.30</b>  | <b>.31</b>  | -           |             |
| 4<br>EdTech before | 7.28<br>(3.76) | <b>.60</b>  | <b>.36</b>  | <b>.28</b>  | -           |
| 5<br>Gender        | -              | <b>-.13</b> | <b>-.00</b> | <b>-.14</b> | <b>-.06</b> |
| 6<br>Age           | -              | <b>-.12</b> | <b>.00</b>  | <b>-.06</b> | <b>-.06</b> |
| 7<br>Discipline    | -              | <b>.13</b>  | <b>.00</b>  | <b>.08</b>  | <b>.11</b>  |

## The CRTS-Study: Results

What is the role of experience, attitude, and teaching self-efficacy for the use of educational technology for online teaching?

|                                 | Model 1                                   |             | Model 2                                    |                 |
|---------------------------------|---|-------------|--|-----------------|
|                                 | $\beta$                                   | $p$         | $\beta$                                    | $p$             |
| Gender (female - male)          | <b>-.10</b>                               | <b>.011</b> | -.05                                       | .095            |
| Age ( $\leq$ 45yrs - $>$ 45yrs) | <b>-.09</b>                               | <b>.021</b> | <b>-.08</b>                                | <b>.009</b>     |
| Discipline (STEM - Non-STEM)    | <b>.14</b>                                | <b>.004</b> | .04  | .222            |
| Attitude                        |   |             | .07  | <b>.033</b>     |
| Self-efficacy                   |   |             | .12  | <b>&lt;.001</b> |
| EdTech use before               |   |             | .55  | <b>&lt;.001</b> |
| Model fit                       | $R^2 = .04$<br>$F(3,670) = 8.97, p <.001$ |             | $R^2 = .40$<br>$F(6,667) = 74.04, p <.001$ |                 |

# Conclusion







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**Thank you**  
for your attention.