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The team
After this session
- You have discussed what challenges come with writing an open book and how to tackle them
Program

5' - Check-in

5' - 10' About our project

10' x 3 Challenges

5' Check-out + Questions
Check-in:

Your name +
Why are you here? +
Something specific you would like to get out of this session? +

How experienced are you? (scale 1-5)
Publication process

Create
- Chapter outline/model
- Write

Prepare to Publish
- Format content in platform
- Check for accessibility
- Set up cover, add metadata
- Peer review

Maintain
- Gather adopter feedback
- Correct errors
- Update content
- Add features/topics

Plan
- Project scoping
- Brainstorming
- Topics/structure

Edit, Review, Revise
- Content reviewed
- Revisions made
- Content edited

Share
- Submit to OER collections
- Share with colleagues
- Social media
Timeline of our project

Kick off
• How to begin?
• How to work together (in Covid Times)?
• How to write a book?

Writing/Reviewing
• Structuring the book
• Making time to write
• How to review?
• Student reviews
• How to organize?
• Finding the time

Grasple
• Identifying and creating exercises
• Integrating Grasple in the book

Platform
• Big group of writers
• Interactivity
• Grasple integration
• LaTeX

Pilot
• What do students think?
• Does it work?
• How to interweave in learning activities?

Finishing and sharing the book
• Keep writing
• sharing
• processing reviews/feedback

TUDelft
Timeline of our project

- How to begin?
- How to work together (in Covid Times)?
- How to write a book?

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Grasple
- Big group of writers
- Interactivity
- Grasple integration
- Latex

Platform
- What do students think?
- Does it work?
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Pilot
- Keep writing
- Sharing
- Processing reviews/feedback

Finishing and sharing the book

Timeline of our project

https://www.versnellingsplan.nl/Kennisbank/open-tekst-boek/
Question:
Do we need a printed version of the open, online book we create?
Do we need a printed version of the open, online book we create?

Yes

No
What we learned:

First we were unsure

Open Education
As accessible and inclusive as possible
Challenge:
Tone of voice
Professional translator: Adjust all chapters to the same language

Every Chapter its own tone of voice
Outcome:

Each paragraph will have their own tone of voice
How to create cohesion?
- Lay-out
- Structure
- Notation
- Images
- Mathematical language (ie injectivity + surjectivity instead of one-to-one + onto)
Challenge:

Creating an open book vs adopting a commercial book
Challenge:
WHY DIY? Why not a commercial book?

• Form groups: 3-4 per group
• Discuss pro’s and cons of DIY vs commercial solutions
• Write pro’s and cons on flipover
• Discuss plenary
Our considerations

- Tailored approach
- Flexibility
  - For reader
  - For faculties (1 book to rule them all)
  - For teaching staff to mix & match content and integrate content from external resources
- Keeping up to date and connected to TU Delft programmes and initiatives (i.e. MOOCs) – one body of knowledge
- Integration with tools to practice already used on campus (integral/seemless learning experience)
- Open for reuse by others
- Open to feedback from others
- Cost reductions for students (after investment)
Other challenges
Finding a suitable platform (LaTeX-friendly) → LibreTexts
Interactive exercises → Grasple
Finding TIME
3 - Orthogonality

In $\mathbb{R}^2$ and $\mathbb{R}^3$ the dot product gives an easy way to check whether two vectors are perpendicular:

$$\mathbf{v} \perp \mathbf{w} \iff \mathbf{v} \cdot \mathbf{w} = 0.$$  

We use this identity to define the concept of perpendicularity in $\mathbb{R}^n$. It seems a bit 'academic', but in this more general setting the term orthogonal arises.

**Definition 6**

Two vectors $\mathbf{v}$ and $\mathbf{w}$ in $\mathbb{R}^n$ are called *orthogonal* if $\mathbf{v} \cdot \mathbf{w} = 0$. As before, we denote this by $\mathbf{v} \perp \mathbf{w}$.

**Example 7**

Let $\mathbf{u} = \begin{bmatrix} 1 \\ 2 \\ -1 \end{bmatrix}$, $\mathbf{v} = \begin{bmatrix} 3 \\ -1 \\ 2 \end{bmatrix}$, $\mathbf{w} = \begin{bmatrix} 2 \\ 2 \\ -1 \end{bmatrix}$. We compute

$$\mathbf{u} \cdot \mathbf{v} = 3 - 2 - 2 + 1 = 0,$$

$$\mathbf{u} \cdot \mathbf{w} = 2 + 4 + 1 - 2 = 5,$$

$$\mathbf{v} \cdot \mathbf{w} = 6 - 2 - 2 - 2 = 0,$$

and conclude: $\mathbf{u}$ and $\mathbf{v}$ are orthogonal, $\mathbf{u}$ and $\mathbf{w}$ are not orthogonal, $\mathbf{v}$ and $\mathbf{w}$ are orthogonal. In $\mathbb{R}^2$, two nonzero vectors that are orthogonal to each other (i.e. have either the same or the opposite direction). In $\mathbb{R}^n$ with $n \geq 3$ this no longer holds. In this example vector $\mathbf{w}$ are orthogonal to the vector $\mathbf{c}$, but $\mathbf{u} \neq c\mathbf{w}$.

By definition the zero vector is orthogonal to any vector, since $\mathbf{0} \cdot \mathbf{v} = 0$. Moreover, the zero vector is the only vector that is orthogonal to all vectors in $\mathbb{R}^n$. Among the nonzero vectors in $\mathbb{R}^n$ there is typically an orthogonal basis consisting of $n$ vectors.
Figure 6. Projection of a vector $w$ onto a non-zero vector $v$

Proposition 11
In the definition above the vector $\hat{w}$ with these properties is unique and it is given by

$$\text{proj}_v(w) = \hat{w} = \frac{w \cdot v}{v \cdot v}$$

Skip/Read the proof

Proof
With the rules of the dot product the vector $w$ is easily constructed: Starting from

$$\hat{w} = tv, \text{ for some } t \in \mathbb{R}$$

and

$$(w - \hat{w}) \perp v$$

it follows that we must have

$$(w - tv) \cdot v = w \cdot v - t(v \cdot v) = 0$$
What did you take away from this session?
Questions?
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