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Deploying an e-Learning environment in Zanzibar:

A short guide

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UKaid
from the British people

About this document

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Agenda

1. Background and scope
2. Roles and responsibilities
3. Piloting and implementation
4. Budget and timelines
5. List of VLEs

1. Background and scope

EdTech Hub's technical assistance to Zanzibar

In April 2020, the MoEVT and the World Bank approached the EdTech Hub to explore the feasibility of implementing a Virtual Learning Environment (VLE). The parties agreed on three deliverables to support this work.

1. Feasibility assessment

A practical and actionable report analysing key factors to be considered in deploying an e-learning platform in Zanzibar;

2. Content curation

A report documenting the process of sourcing appropriate digital content, aligning this content with the curriculum and populating the e-learning system accordingly;

3. Implementation of a VLE

An implementation plan to guide the deployment of an e-learning system in Zanzibar.

This presentation deck is the third deliverable.

Scope of the implementation guide for VLEs

This resource provides

- A presentation deck
- An overview of the element that should be addressed in a plan to pilot and implement a VLE
- An outline of a proposed approach that can be used to pilot a VLE
- An overview of the expertise that will be required to support VLE piloting and implementation

Instead of

- A full document
- A step-by-step framework
- Recommendation of a specific VLE
- All the expertise you need

2. Roles and responsibilities

Roles and responsibilities — principles

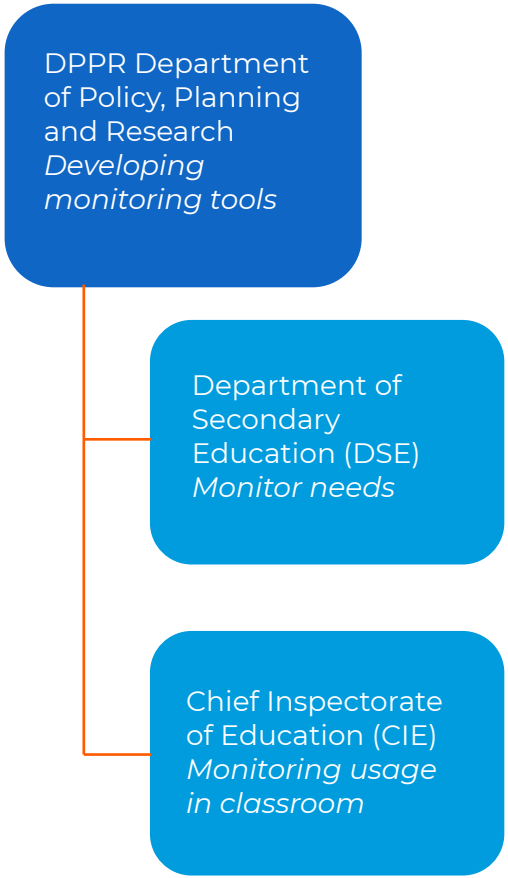
Curriculum developers take the lead	Content developers are assisted by technology, but curriculum developers have the final word on how and when content is ‘good’.
One coordinating body	There should be one coordinating body, responsible for liaising with all players.
Clearly defined roles and responsibilities	Each institution or body knows what is expected, what their role is, when they play it, and what they will be judged for.
No overlap between responsibilities	Different bodies can contribute to a role, but only one body bears final responsibility.

Responsibilities should not overlap

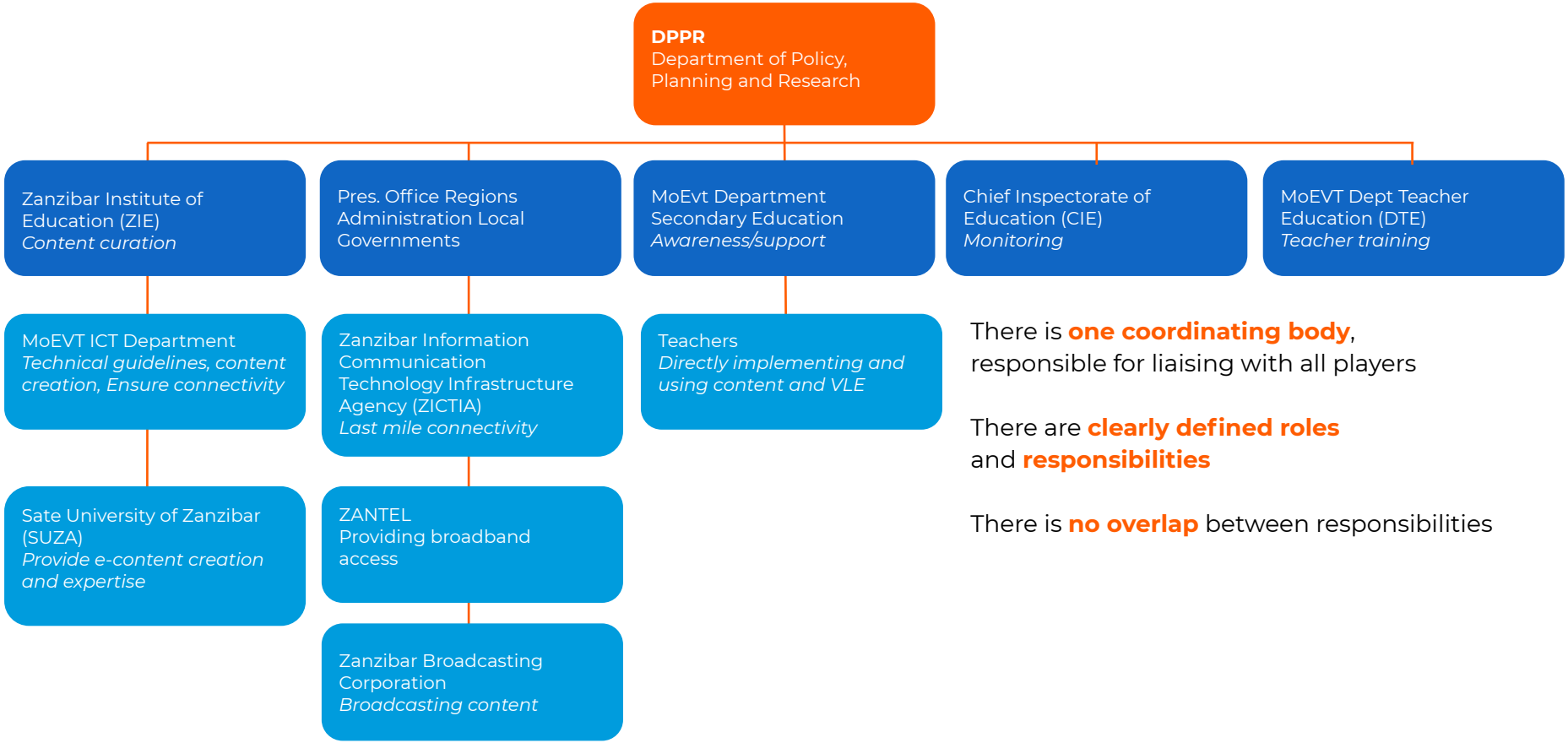
- Responsibilities should be distinct and not overlap
- Diffuse responsibility may mean no-one takes responsibility
- For example: several bodies seem involved in monitoring

In Zanzibar's MoEVT, some responsibilities seem to overlap.

For example, monitoring is performed by multiple departments



EdTech Hub's technical assistance to Zanzibar



There is **one coordinating body**, responsible for liaising with all players

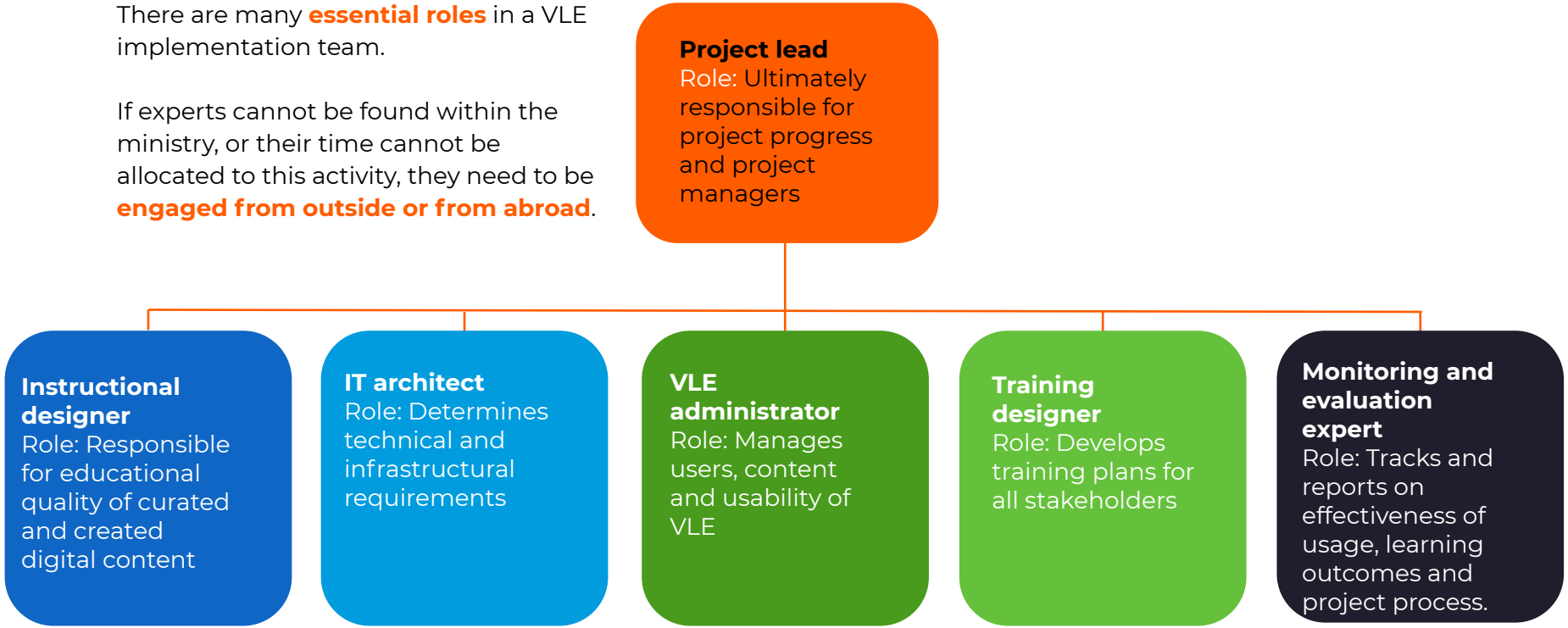
There are **clearly defined roles** and **responsibilities**

There is **no overlap** between responsibilities

Experts must be allocated or hired

There are many **essential roles** in a VLE implementation team.

If experts cannot be found within the ministry, or their time cannot be allocated to this activity, they need to be **engaged from outside or from abroad**.

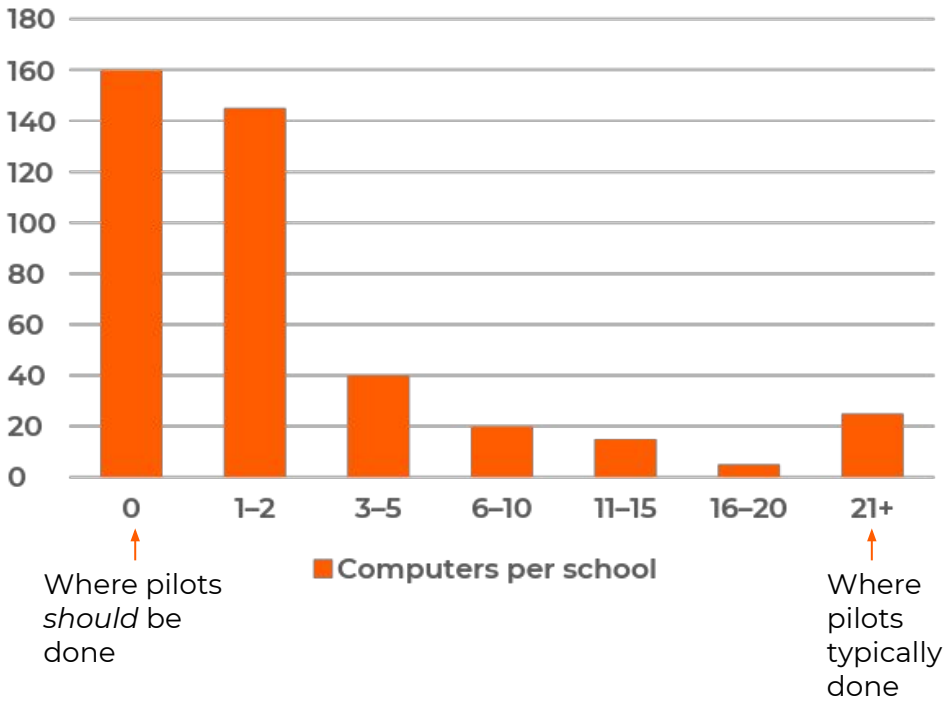


3. Piloting and implementation

Piloting approach and school sample selection

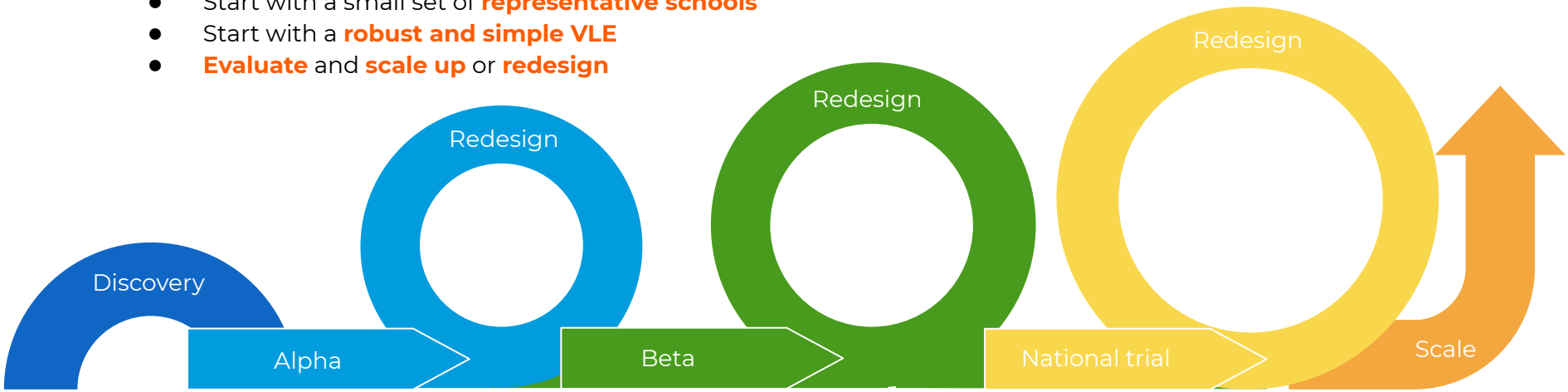
Pilot where you want to ***scale***, not where it is ***easy*** to pilot

- Pilot in schools that represent other schools
- Start ‘down and out’, then move ‘up and in’ (Trucano, 2013)
- Schools with infrastructure usually are better funded, with better teachers, committed principals and more affluent students
- Results from ‘good schools’ do *not* generalise to all schools



Implement through an iterative approach

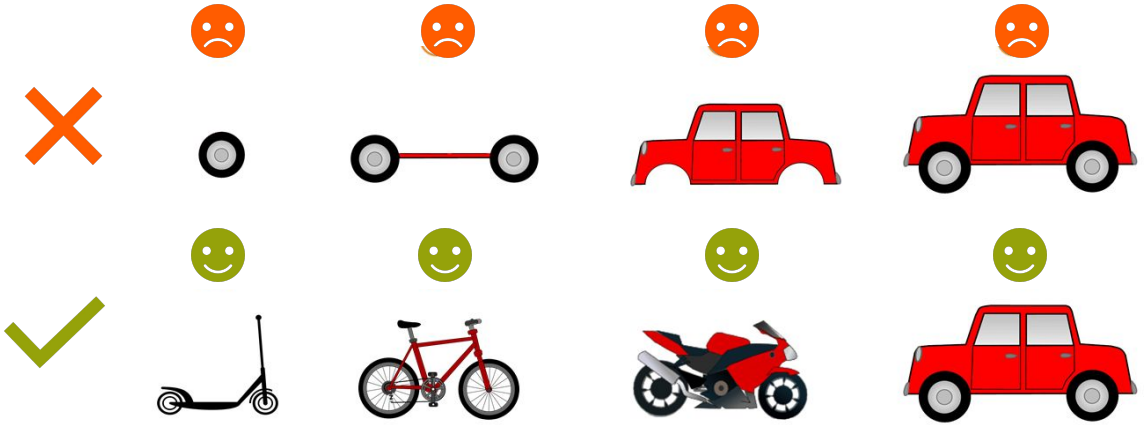
- Start with a small set of **representative schools**
- Start with a **robust and simple VLE**
- **Evaluate** and **scale up** or **redesign**



Focus	Understanding the challenge	Testing solutions	Refining the most promising solutions	Design for national scale	Scale
Number of schools		1–5	15–20	150–300	500+
Time	4–6 weeks	1 term	1 term	1 year	> 1 year

Start with minimal viable VLE and expand

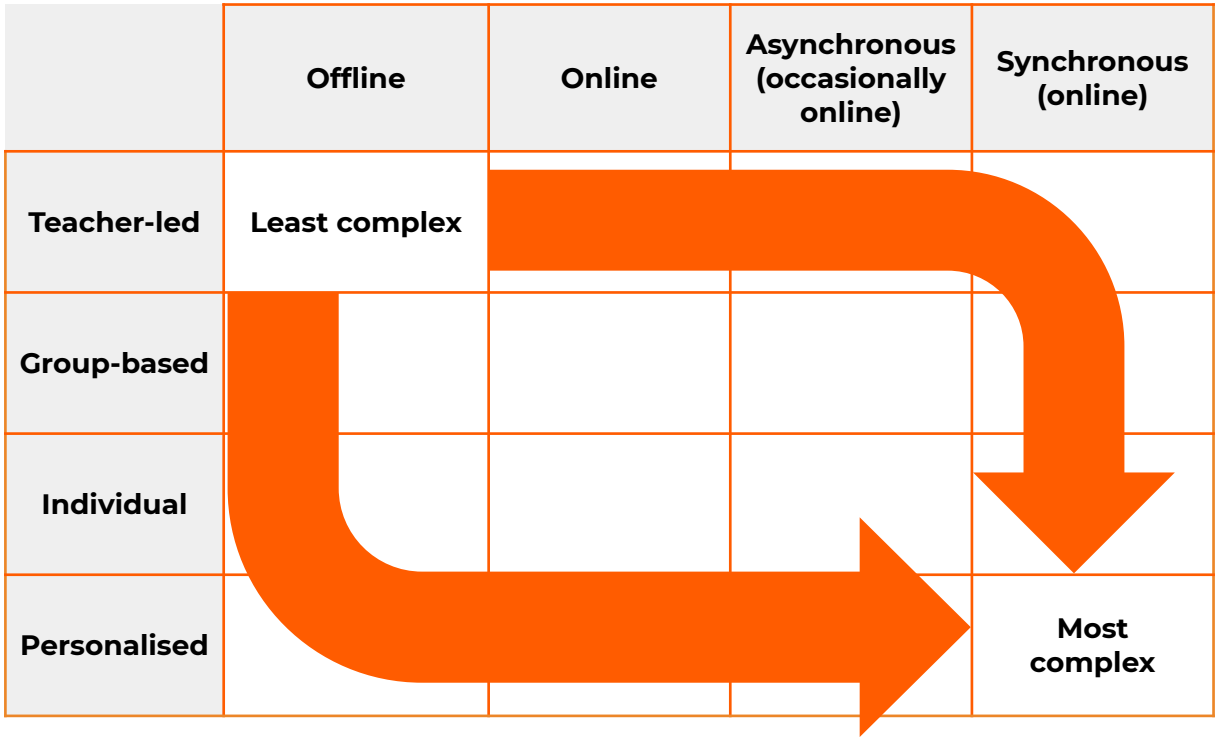
- An **agile approach** produces viable products immediately
- **iterative**, **flexible** and **adaptable**
- creates a series of **minimal viable products**
- lets us **assess and evaluate** if we are moving in the **right direction**
- **complexity** is brought in over new iterations
- For details, see Adam, McBurnie
- & Haßler (2020)



There are different pathways to a complex VLE

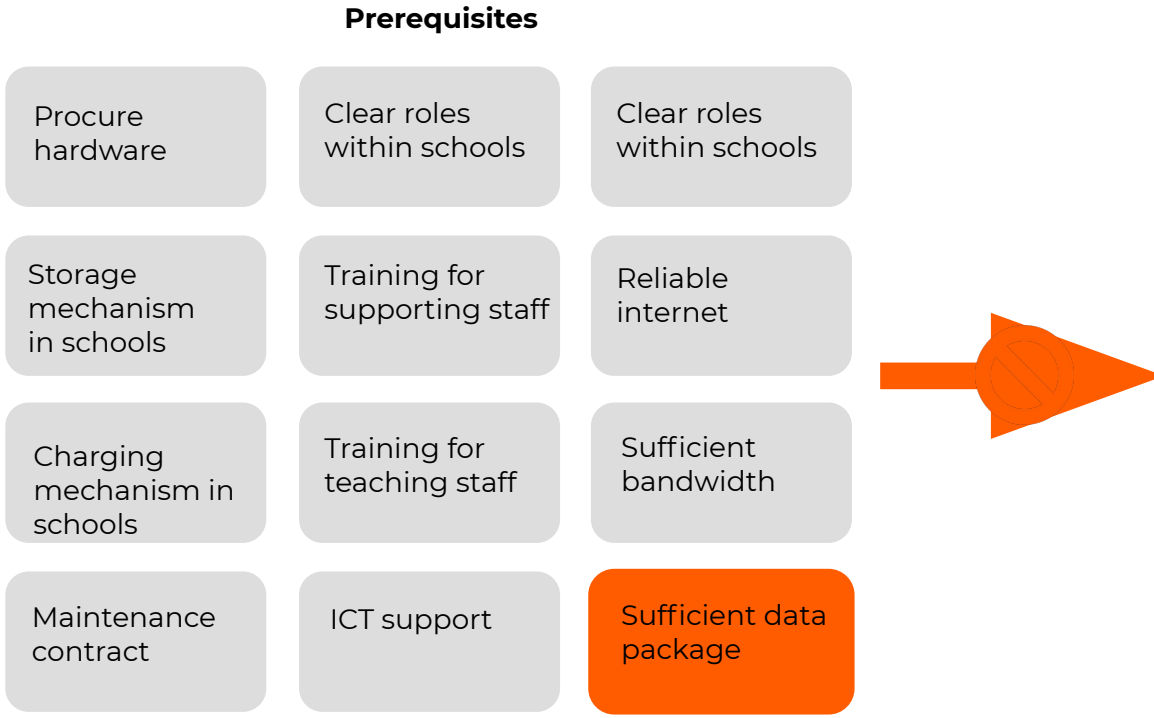
Move to a more complex step only when all conditions in a previous step have been met.

Different pathways can be taken towards a more complex VLE implementation as your needs evolve.

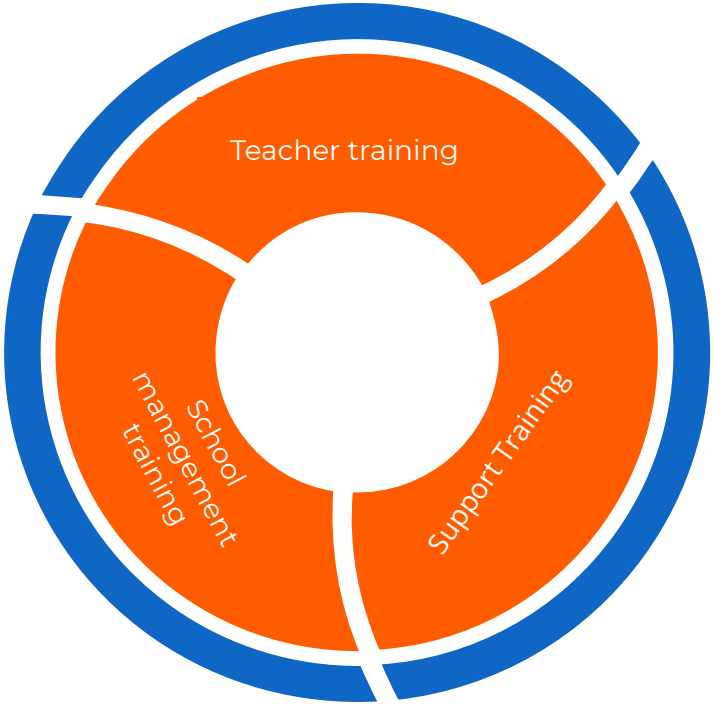


Starting with a complex VLE carries risk

- Implementing a VLE has **many prerequisites**. A more complex VLE has more prerequisites.
- **All prerequisites** must be met for the implementation to be effective.
- If most but not all prerequisites are met, the implementation will **not** be a success.
- In this example, there are many prerequisites and most are met. However, because there is an insufficient data package, the implementation **will not be a success**.



A VLE requires a continuous development plan



Deploying a virtual learning environment requires **all actors to know their role** and be adequately trained to execute it. **Developing human capacity** to execute these roles is a precursor to successful VLE implementation.

Without **well-trained teachers** the VLE will not be used. **Ministry staff** must be equipped to lead the roll-out and support schools to use the platform. **Students** need to be gradually supported to build the VLE into their daily learning activities. **Parents** must have a functional knowledge of the VLE to be able to support their children.

There is a chain of dependencies from teachers to supporting staff and school management. All need training in the VLE as part of their **continuous professional development plan**.

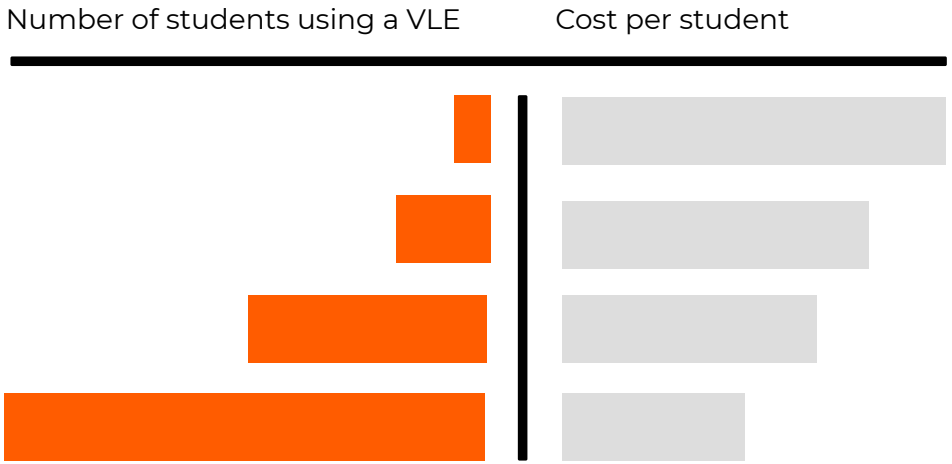
4. Budget and timelines

Budget

Developing even a broad budget for a VLE is difficult due to the many variables and ongoing costs, which often vary wildly depending on the level of customisation, users, etc.

It is important to note that even free VLEs are not free: the installation, maintenance, updates, etc., are done by government and institutions instead of the service provider.

The cost of a VLE per student typically goes down as the number of students increases.



Budget

There are many different implementation models.
The examples provided range from lowest to highest cost.

These implementation models are examples; there are many others.

We have created two budget examples: one budget example for usage case 1 (the lowest budget) and a budget example for usage case 4 (a high budget).

01	One device per school	• Teachers use the device • Devices support professional development • Students do not use the device
02	One screen per school	• One screen per school in a lab • Classes rotate through the lab
03	Shared devices in a lab	• Limited number of devices in a lab • Devices are shared by around 4 students • Classes rotate through the lab
04	One device per student (lab)	• One device per student in a lab • Students have their individual learning paths • Classes rotate through the lab
05	One device per student	• Each student has their own device • Students have their individual learning paths • Students bear responsibility for the devices

Low budget example — one device per school

This first example is one of the simpler options. This budget is for an implementation that provides **one device per school; teachers use the device for professional development.** Students do not use the device in this scenario.

This budget example is rough and contains assumptions such as the amortisation of four years for devices

This budget estimate for only technology and the VLE comes to around $340 per school over four years. Across approximately 1,000 schools in Zanzibar, this is equivalent to approximately **$340,000 every four years**.

Item per school	Number	Cost	Y1	Y2	Y3	Y4	Total (4 years)
Android tablets per school	1	$150	$150	$0	$0	$0	$150
Maintenance contract for devices	1	$10	$10	$10	$10	$10	$40
Total per school							**$340**

High budget example — one device per student

The second budget example is a more complex option and represents a situation with **one device per student in a lab; classes rotate through the lab**.

This budget example is rough and contains the following assumptions:

- amortisation of four years for devices
- one lab with 15 devices per school
- a loss of 5% of devices per year
- licensing cost for an VLE of $5 per student per year

This budget contains an estimate for only technology and the VLE.

The budget amounts to around $20,600 per school over four years. Across approximately 1,000 schools in Zanzibar, this is equivalent to approximately **$20 million every four years**.

High budget example — one device per student

Item per school	Number	Cost	Y1	Y2	Y3	Y4	Total (4 years)
Android tablets per school	40	$150	$6,000	$0	$0	$0	$6,000
Loss of devices of 5%	2	$150	$300	$300	$300	$300	$1,200
Maintenance contract for devices	40	$10	$400	$400	$400	$400	$400
Storage/charging cart per school	1	$500	$500	$0	$0	$0	$500
Local server	1	$500	$500	$0	$0	$0	$500
Local UPS	1	$800	$800	$0	$0	$0	$800
VLE license/student/year	500	$5	$2,500	$2,500	$2,500	$2,500	$10,000
Total per school			**$11,000**	**$3,200**	**$3,200**	**$3,200**	**$20,600**

Budget — human resources per school

The table below provides a rough estimate for the human resource costs per school. The budget below applies to a situation with one lab. Teacher training costs are the **additional training costs** necessary for working with a VLE and include teacher salary, transport, trainer, lunch, accommodation, etc. Central costs for piloting, content curation, content upload, training material, monitoring protocols, etc., have not been included.

With approximately 1,000 schools, the annual additional **HR cost comes to $12,150,000**.

Human resources per school	**Number**	**Cost/person/day**	**Annual cost**
Teacher training (20 teachers)	20 days / year / teacher	$25	$10,000
School management training (3 managers)	5 days / year / school manager	$30	$450
School technician training (1 technician)	20 days / year / technician	$25	$500
School technician time allocation	2 days / week (40 weeks / year)	$15	$1,200
Total (human resources)			**$12,150**

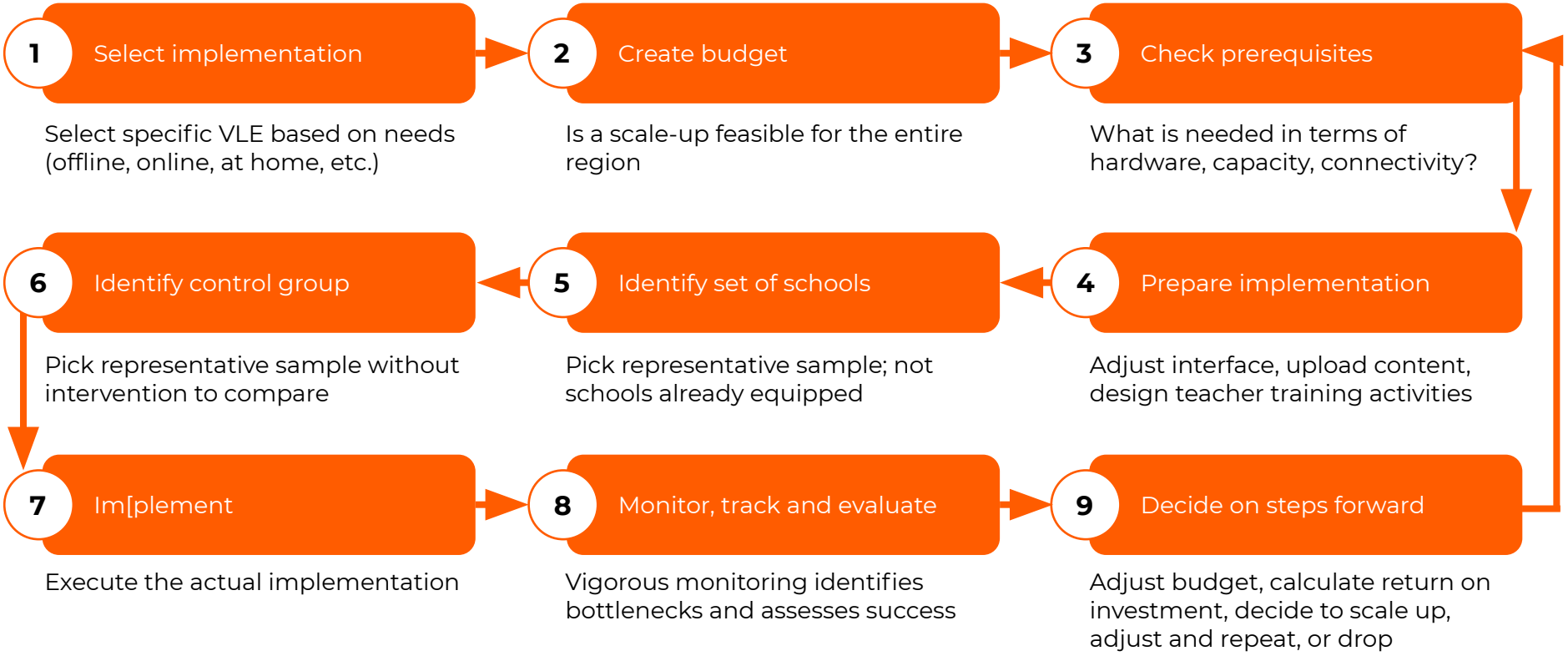
Budget — experts must be allocated or hired

A good project team is essential, but the relevant expertise may not be present within the ministry or region.

Allocating or attracting experts requires budget allocation. For the rough budget below, we have assumed that resources are available in the region. If international expertise is necessary, these costs will rise considerably. Note that external experts are a temporary solution and that the ministry must build its own capacity with their help.

Expert	Role	Cost/month (local)	Annual cost
Project lead	Ultimately responsible for project progress and managers	$4,000	$48,000
Instructional designer	Responsible for educational quality of digital content	$3,000	$36,000
IT architect	Determines technical and infrastructural requirements	$3,000	$36,000
Training designer	Develops training plans for all stakeholders	$2,500	$30,000
M&E expert	Tracks and reports on usage, learning outcomes and process	$3,000	$36,000
Total		**$15,500**	**$186,000**

Implementation timelines — steps



Implementation timelines

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11
Select implementation											
Create budget											
Check prerequisites											
Prepare implementation											
Identify set of schools											
Identify control group											
Implement for 6 months											
Monitor, track and evaluate											
Decide on steps forward											
Scale up, adjust and repeat, or drop											

5. List of VLEs

Examples of VLEs

We have gathered a list of potential VLEs. This is not a complete list.

Selection criteria for these VLEs were:

 They offer **offline capabilities**; in some cases, this requires a local router with the VLE installed

 They allow **content** to be **uploaded**; in some cases, they may contain their own content as well

 The **links** at the end of this deck refer to **more resources**

Licensing costs are only a fraction of the Total Cost of Ownership (TCO) for any implementation.

Examples of VLEs

VLE	License	Comments
Kolibri	Free	Low-cost solution designed for and tested in LMICs (e.g., Tanzania, DRC). Large content library; offers full offline VLE (including student assessment).
Rachel Plus	Free	Low-cost solution around a local, offline server (the 'Rachel'). Focus on content provision rather than VLE features.
Moodle	Free	Widely used open source LMS in higher education. Mixed outcomes for schools and LMICs. Limited offline functionality. No content provided. Highly customisable.
ProFuturo	Free	Proprietary but free in emerging markets; does have some content as well.

Links to resources and further reading

Adam, T., McBurnie, C, & Haßler, B. (2020). Rolling out a national virtual learning environment. The EdTech Hub. https://docs.edtechhub.org/lib/KWJRW62J/download/9X6UTQBR/Adam%20et%20al.%20-%202020%20-%20Rolling%20out%20a%20national%20virtual%20learning%20environmen.pdf

McBurnie, C. (2020). The use of virtual learning environments and learning management systems during the COVID-19 pandemic. The EdTech Hub. https://docs.edtechhub.org/lib/53YEZE6A

McBurnie, C., Adam, T., Kaye, T., & Haßler, B. (2020). Zero-rating educational content in low- and middle-income countries. The EdTech Hub. https://docs.edtechhub.org/lib/F4PCMTZB

The World Bank. (2020). Remote learning, distance education and online learning during the COVID19 pandemic: A Resource List by the World Bank's EdTech Team. https://openknowledge.worldbank.org/handle/10986/33499?show=full

Trucano, M. (2013). A different approach to scaling up educational technology initiatives. World Bank Blogs. https://blogs.worldbank.org/edutech/scaling-up