CHILD-DIRECTED TABLET-BASED LEARNING:

Project Launch, Monitoring, and Improvement Toolkit

University of Nottingham
UK | CHINA | MALAYSIA

IMAGINE
THE FUTURE OF LEARNING

VSO

ABOUT

These toolkits were authored by Imagine Worldwide, Professor Nicola Pitchford (University of Nottingham), and Voluntary Service Overseas.

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ABOUT IMAGINE WORLDWIDE

Imagine Worldwide exists to empower children around the globe to build the literacy and numeracy skills needed to achieve their full potential. Imagine is partnering with organizations to pilot promising child-directed, tech-enabled learning solutions. Imagine is building an evidence base for what works, why, and under what conditions and will use data to drive continuous improvement of content and implementation.

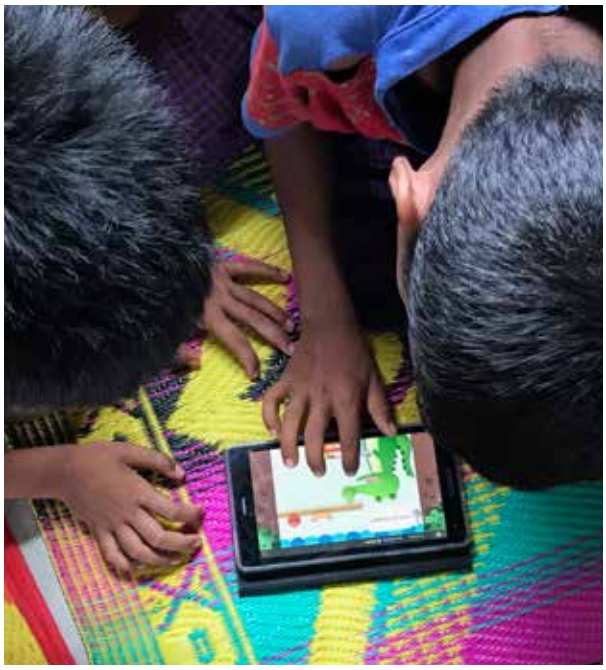
ABOUT THE UNIVERSITY OF NOTTINGHAM

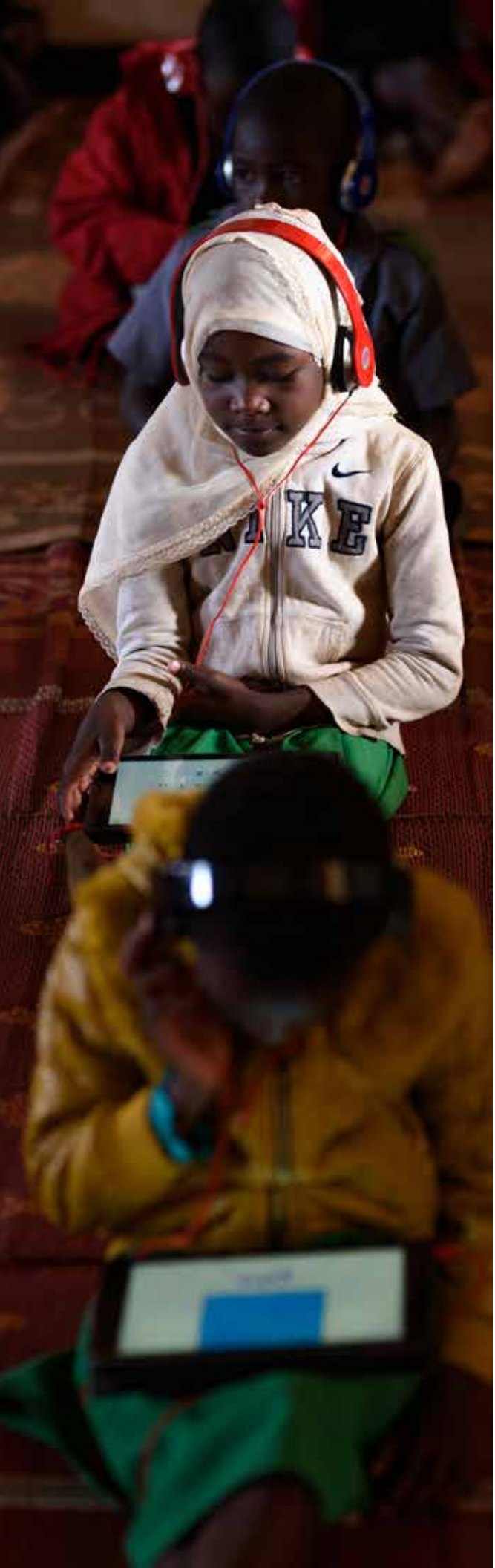
The University of Nottingham was founded on a compelling vision that education can transform people's lives, has great social and economic value, and should be accessible to everyone who can benefit from it. Professor Nicola Pitchford, from the School of Psychology, is applying the University's vision to address the Global Learning Crisis by investigating how tablet-based learning might provide access and support for marginalized children worldwide.

ABOUT VOLUNTARY SERVICE OVERSEAS (VSO)

VSO brings people from different backgrounds, expertise, and experiences together to fight poverty. VSO started the Unlocking Talent Project which is a growing, global initiative, made up of an alliance of partners that focuses on putting children and their educational needs first. At its core, the project uses innovative education technology to help overcome education challenges that hold learners back.

Have comments or feedback for the authors? Please email: toolkits@imagineworldwide.org.





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INTRODUCTION

WHY WERE THE TOOLKITS CREATED?

Tablet-based learning empowers learners to build skills and knowledge through the use of technology. Children direct their own learning, using high-quality, research-based software curriculum on a tablet. We recognize that designing and implementing tablet-based learning programs can be challenging. Therefore, we documented our learnings from implementations in Bangladesh, Malawi, and the United Kingdom to provide information to organizations interested in designing and implementing their own tablet-based learning programs. We hope that these toolkits provide your organization guidance to deliver programs that improve learning outcomes for learners in your community and around the world.

WHO ARE THE TOOLKITS FOR?

These toolkits are for organizations such as non-governmental organizations (NGOs) or Ministries of Education in governments that want to develop and deploy tablet-based learning programs. The following actors will find these toolkits useful:

- ☐ Program Directors or equivalent role
- ☐ Project Managers or equivalent role
- ☐ Software Developers
- ☐ Site* leaders, staff, and facilitators

*Refers to the location, such as a school, community center, or home, in which learning programs are implemented.

HOW SHOULD I USE THE TOOLKITS?

These toolkits will help your organization think through the different steps involved in designing and implementing tablet-based learning programs. Treat these recommendations as rough guidelines as they will vary based on your implementation context.

There are three toolkits:

1) PROJECT DESIGN
2) PROJECT PREPARATION
3) PROJECT LAUNCH, MONITORING, AND IMPROVEMENT

Each toolkit is composed of worksheets covering different topics. The toolkits and worksheets are modular, so you can use all of the worksheets or select worksheets depending on your needs. We also recommend iterating on select worksheets as you go through the design and preparation process. These worksheets are denoted with a ↻ icon.

Please note, “project” and “program” are used interchangeably throughout the toolkits.

FIVE LESSONS NOT TO MISS

Launching a tablet-based learning project? Here are five lessons you shouldn't miss:

1. PICK THE RIGHT SOFTWARE: Software is critical to learners' experiences and outcomes. With so many learning products available, it can be challenging to differentiate among them. Before selecting a software, make sure that you have an in-depth understanding of its curriculum, evidence, and features. Don't forget to troubleshoot before launch!

2. IMPLEMENTATION WILL TRUMP STRATEGY: For effective project delivery, plan in great detail, work with partners when you don't have the expertise or capacity, and test in the field. All project logistics need to be ironed out and discussed with any stakeholder -- from software partners to site facilitators -- who will be regularly involved in the project.

3. ENGAGE THE COMMUNITY: Every implementation context is different! It is critical that the community wants and supports your project, and that the community will own and sustain the project over time. In addition, cultural and religious norms typically shape project design and implementation. To launch an effective project, engaging community members throughout preparation and implementation is vital.

4. EVERYTHING WILL TAKE LONGER THAN EXPECTED -- ESPECIALLY PROCUREMENT: Procurement is one of the most time-consuming steps in preparation for delivering a tablet-based learning project. Delays can arise for a variety of reasons so start procurement as early as possible and allow for extra time.

5. LEARN AND IMPROVE! Throughout design and implementation, you will learn information that may cause you to change direction. That's expected! Test your hypothesis and incorporate your learnings into the design to deliver a better project. After launching, use data and feedback to further improve the project.

PROJECT LAUNCH, MONITORING, AND IMPROVEMENT: TOOLKIT INTRODUCTION

HOW SHOULD I USE THIS TOOLKIT?

The Project Launch, Monitoring and Improvement toolkit is intended to guide you through planning for the launch day and post-launch monitoring activities.

WHO IS THIS TOOLKIT FOR?

- ☐ Program Directors or equivalent role
- ✓ Project Managers or equivalent role
- ☐ Software Developers
- ✓ Sites leaders, staff, and facilitators

HOW IS THIS TOOLKIT ORGANIZED AND WHERE DO I START?

This toolkit is composed of two worksheets. Our suggested approach to completing the toolkit is outlined below.

WORKSHEETS

3.1 LAUNCH DAY

3.2 IMPLEMENTATION MONITORING AND IMPROVEMENT

ITERATE ON THIS WORKSHEET AS YOU COMPLETE THE OTHER WORKSHEETS IN THE TOOLKIT

3.1 LAUNCH DAY

You've designed and prepared for the project and are ready to launch. To ensure that your project has a great start, this worksheet provides guidance on:

- Pre-launch activity checklists
- Launch day programs

AUDIENCE:

- ☐ Program Directors or equivalent role
- ✓ Project Managers or equivalent role
- ☐ Software Developers
- ✓ Sites leaders, staff, and facilitators

PART I: PRE-LAUNCH ACTIVITY CHECKLISTS

Before launch day, make sure that the following activities have been completed. The checklist should be adapted based on your implementation context.

- ☐ Permissions to implement have been received
- ☐ Communities have been engaged
- ☐ Facilitators have been trained
- ☐ Technology is on-site and working
- ☐ Learners are aware of their participation and/or are registered
- ☐ Other: _____

For projects that are a part of a research study and/or from which data will be collected, check that the following additional activities are completed before launch.

- ☐ Ethics approval has been received by the appropriate body
- ☐ Participation consent procedures have been followed
- ☐ Communities understand the need and plans for a control group (if applicable)
- ☐ Learners and their parents are aware of who has been selected for the treatment and control groups (if applicable)
- ☐ Other: _____

PART II: LAUNCH DAY PROGRAMS

For launch day, we suggest that you work with your implementation and site partners to create a program. Consider the following:

PROGRAM ACTIVITIES	INVITEES
• Stakeholder speeches • Symbolic activities (e.g., ribbon cutting) • Cultural and religious rituals • Tablet session observations	• Learners • Parents • Facilitators and/or teachers • Community leaders and organizations • Government leaders • Site leaders and committees

CASE EXAMPLE: LAUNCH DAY PROGRAM IN AN IN-SCHOOL IMPLEMENTATION IN LILONGWE, MALAWI

Imagine Worldwide, in partnership with the University of Malawi-Chancellor College and Voluntary Service Overseas (VSO), implemented a tablet-based learning intervention in Lilongwe, Malawi using onecourse software from onebillion. The program was implemented during the 2018-19 and 2019-20 school years in two government primary schools. The goal of the study was to understand how much additional learning over normal instruction learners gained in reading and math with 40 minutes of daily use of the tablet-based curriculum and whether children can attain reading fluency and comparable numeracy skills.

Grade 2 learners, ages 6–10, were randomly assigned independently within the two schools to treatment and control groups. Children in the treatment groups stepped out of different classes on different days of the week to use the tablets at the learning center (a building on the school site where tablet sessions took place). Each day, four sessions were held and two teachers facilitated each session. The program supplemented the instruction that the children already received at school.

LAUNCH DAY

Attendees:
Approximately 50 attendees

- Learners
- Community leaders
- Parent Teacher Association
- Student Management Committee
- Mothers Group
- Head Teacher and select teachers
- District Education Manager (government representative)
- Voluntary Service Overseas representatives
- Imagine Worldwide representatives

Program:
60 minute program to kick-off the project

TIME (MIN)	ACTIVITY	RESPONSIBLE ACTOR
10	Welcome, introductions, and remarks	Head Teacher
5	Remarks from community leaders	Community leaders
5	Remarks from Imagine Worldwide and Voluntary Service Overseas	Select representatives
5	Remarks from the District Education Manager	District Education Manager
5	Walk to tablet-based learning session site. District Education Manager ceremoniously hands one learner a tablet	District Education Manager
20	Observe a session in progress	Everyone
10	Closing remarks	Head Teacher

3.2 IMPLEMENTATION MONITORING AND IMPROVEMENT

Implementation monitoring is important to
- Ensure the quality of implementation
- Identify and troubleshoot implementation challenges that affect learning
- Understand when and how to provide additional support and improve the program

Implementation monitoring is especially vital if you are conducting research and/or testing a delivery model for scale. This worksheet provides guidelines on:

- Who conducts monitoring
- How frequently should monitoring be conducted
- What should be monitored
- Using feedback and data from monitoring to improve the program

AUDIENCE:

- ☐ Program Directors or equivalent role
- ✓ Project Managers or equivalent role
- ☐ Software Developers
- ✓ Sites leaders, staff, and facilitators

PART I: WHO CONDUCTS MONITORING?

We suggest that project managers, field specialists, or those in equivalent roles at your or your implementation partner organization conduct regular monitoring. You can also train a site leader or facilitator to monitor implementation. If you are conducting research, you may have an independent research monitoring team conduct monitoring visits.

PART II: HOW FREQUENTLY SHOULD MONITORING BE CONDUCTED?

You may start with weekly site visits and adjust to bi-weekly or even monthly based on the support the site needs to deliver the project. For a brand-new project, we recommend weekly monitoring.

If monitoring shows deviations from implementation as intended, this will require discussion at the site to understand the root cause and possible solutions. Additional training and monitoring can be helpful.

PART III: WHAT SHOULD BE MONITORED?

You should monitor that the program delivery policies and procedures are being followed to ensure that learners will benefit from the program. Conduct monitoring through a combination of interviews and observations of the site environment and sessions. Tools such as checklists can help you structure your monitoring visits to ensure that you capture relevant details.

Below is a starter checklist. We recommend monitoring the categories provided even if the components need to be adapted for your context.

TABLE 3.2.1

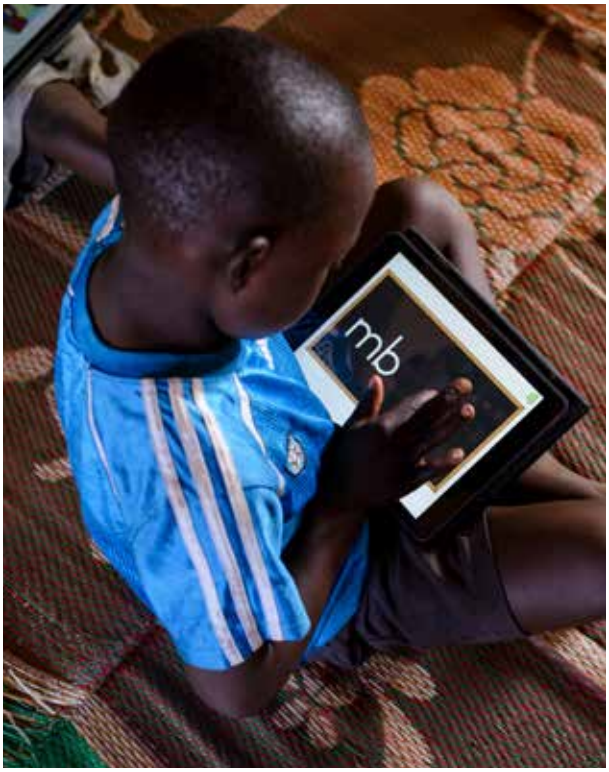
CATEGORY	SAMPLE COMPONENTS TO MONITOR (NON-EXHAUSTIVE)
Learner experience	☐ Attendance ☐ Ability to access and use technology ☐ Level of engagement (e.g., guessing or random-tapping) ☐ Approach to resolving challenges with / without facilitator support ☐ Other: _____
Facilitator experience	☐ Attendance ☐ Ability to use technology (e.g., trouble-shooting, use of learner data) ☐ Learner supervision and support ☐ Level of engagement ☐ Ability to operate the site ☐ Other: _____
Site operation	Environment ☐ Child-friendly and inclusive learning environment ☐ Functional provisions for parental engagement ☐ Gender parity in learning activity participation ☐ Clean and usable and facilities ☐ Other: _____ Schedule ☐ Frequency and type of deviations from session schedule ☐ Other: _____ Technology ☐ Frequency and type of technological issues ☐ Performance of regular technology maintenance ☐ Other: _____
Other	_____ _____ _____

PART IV: USING FEEDBACK AND DATA FROM MONITORING TO IMPROVE THE PROGRAM

Monitoring is critical to ensure the quality of implementation and inform decisions on how to continuously improve* the program. With frequent monitoring, it is important to track and communicate program performance against key metrics over time. By using monitoring data and feedback, you will be able to identify areas of the program that need improvement and track how those areas improve over time.

One way to track and communicate program performance with implementation and site partners is through a dashboard. A dashboard of performance against select metrics can help you identify trends, pinpoint challenges, and track improvement once a program change occurs. Your dashboard should track the metrics that you deem most critical for a successful project implementation (these metrics should be aligned with your monitoring checklists).

Below is a sample dashboard that tracks performance against select metrics.



SITE _____				Data for two week period ending on:				Notes for two week period ending on:			
Category	Metric	Target	Average	11/15/2019	11/29/2019	12/13/2019	12/27/2019	11/15/2019	11/29/2019	12/13/2019	12/27/2019
Learner experience	Average attendance rate*	80% +	81%	70%	80%	85%	90%				
	Percent of days learning center (LC) is open**	100%	98%	90%	100%	100%	100%				
	Number of days LC is open	10	10	9	10	10	10				
	% of daily sessions conducted	100%	96%	90%	100%	95%	100%				
	% of daily sessions run at intended length	100%	96%	100%	90%	100%	95%				
Site operation	% of tablets working	100%	100%	100%	100%	100%	100%				
	% of headphones working	100%	100%	100%	100%	100%	100%				
	% of charging units working	100%	100%	100%	100%	100%	100%				
	Did servers work locally consistently over the period?	Yes	N/A	Yes	No	Yes	Yes				
	Was data transmitted to cloud consis-tently over the period?	Yes	N/A	No	Yes	No	Yes				
Reporting	% data received	100%	98%	95%	100%	100%	95%				
	Bi-monthly project man-ager report	2x/mo	N/A	Yes	Yes	Yes	Yes				

*Average attendance rate is the total number of learners who have tablet usage data during the data period divided by the total number who should have attended at full capacity. Estimated based on log-ins
**Percent of days the LC is open out of days the school is in regular session.

95%+ >= GREEN | 75%-94% = YELLOW | <75% = RED

In our experience, implementation trumps strategy. Even when you plan in great detail and test in the field, there will often be unexpected circumstances that affect the quality of your implementation. Thus, it is critical to conduct implementation monitoring to collect data and feedback that will enable you to continuously improve the program, and ultimately the experience and outcomes for learners.

*If you are conducting research, there may be limitations in the changes you can make to the program given the research design.

CASE EXAMPLE: UNITED KINGDOM INTERVENTION IMPLEMENTATION FIDELITY CHECKLIST

Researchers from the University of Nottingham, together with Apple Distinguished Educator and Early Years Specialist, Marc Faulder, have been implementing the onebillion onecourse math apps in UK primary schools to support the acquisition of basic math skills in children aged 4-7 years. Teaching assistants (TAs) work with a small group of children (up to 10) for 30 minutes a day, for 4 or 5 days a week, over a period of 12 consecutive school weeks. The apps are used as a targeted intervention with children struggling to acquire basic math skills. Children receive the apps in addition to standard whole-class math instruction given by their class teacher. This method of implementation has been evaluated by two published randomized control trials and is highlighted as a promising project in the Education Endowment Foundation's report on Improving Mathematics in the Early Years and Key Stage 1.

As this project scales, the team has developed a checklist for monitoring the fidelity of implementation within the UK context. The checklist has been derived from a published process evaluation conducted by the Nottingham researchers. Within a trial context, the researchers recommend the checklist is used by evaluators once every 2 weeks that the apps are being used across the duration of the trial. When used in a classroom context, the researchers recommend the checklist is used by the head teacher or math lead, once every school term. The checklist enables deviations from intended implementation to be identified quickly and modified accordingly.

Reference: Intervention checklist for implementation of onecourse math in UK primary schools. Pitchford, N.J. (2019). Personal correspondence.

CASE EXAMPLE (CONTINUED): UNITED KINGDOM INTERVENTION IMPLEMENTATION FIDELITY CHECKLIST

IMPLEMENTATION FIDELITY CHECKLIST

DATE: SCHOOL:

TA: WEEK OF INTERVENTION:

LEVEL/ FEATURE	EVALUATION CRITERIA	YES/ NO	ADDITIONAL COMMENTS
TA LEVEL			
Technical support	Teaching assistant (TA) provides technical support (e.g. headphone volume) to children struggling to use the app/iPad.		
Behavioral management	TA provides behavior management to ensure children are well-behaved throughout the session with no interference from other children in the class.		
Supervision	TA provides constant (e.g. always in the room) and consistent (e.g. focused on app session) supervision to all children working with the apps.		
TA logs session	TA uses session log to record absence / presence of children and other aspects of the session requested in the session log.		
PEDAGOGICAL LEVEL			
Pedagogical support Level 1	TA encourages children to work independently through the app. TA does not answer questions for the children on the app. All children should answer questions for themselves.		
Pedagogical support Level 2	TA provides pedagogical support to children requiring additional help with particular topics in the app. Child removes headphones. TA listens to the app section, explains concept to the child, then the child attempts to answer app questions on their own.		
Pedagogical support Level 3	TA includes other resources to explain concepts to children requiring additional help with particular topics in the app.		

CASE EXAMPLE (CONTINUED)

LEVEL/ FEATURE	EVALUATION CRITERIA	YES/ NO	ADDITIONAL COMMENTS
CLASSROOM LEVEL			
Intervention duration	The session lasts for 30 mins. TA stops children 30 mins after all of the children have logged onto the app.		
Dedicated staff member	A dedicated TA delivers the intervention to the same group of children each session.		
Intervention set up	TA has iPads and headphones ready for children to use ahead of the session.		
Dedicated classroom space	The intervention is given in the same dedicated space each session.		
Seating plan	The TA arranges children according to a consistent seating plan each session.		
Accessing individual iPad	All children use the iPad allocated to them each session.		
Children wear headphones	All children wear headphones during the use of the app, or wear their headphones again within 30 seconds of removing them.		
Accessing individual app profiles	All children use their own profile on the app or are redirected to their own profile by the TA within the first 3 minutes of the session.		
Calm environment	The session is conducted in a calm and orderly environment.		
CHILD LEVEL			
Child engagement	Children work through the apps independently and are focused on the app activities. Children are excited to be using the app and seem to enjoy learning with it.		
Learning strategy	All children begin using the app from the next activity in the sequential progression suggested by the app OR children repeat activities that they have already completed for additional practice if they have not passed a test.		
Peer interactions with learning process	Discussions amongst children on how to answer the topics in the app are fine as this may be considered part of the learning process. But it is essential that all children answer questions on the app for themselves. If another child is answering questions for a child the TA steps in and prevents them from doing so.		
Peer support	Children within the intervention group share the success of individual children when they complete a topic.		

GREAT JOB!
YOU'VE FINISHED:

PROJECT LAUNCH, MONITORING,
AND IMPROVEMENT TOOLKIT