



Early Learning Initiative

National College of Ireland

A STEM Family eLearning Framework to Increase Family Engagement in Disadvantaged Communities

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*Supporting parents, communities and schools
in the education of children*



Background

- STEM has been noted as an indicator of future academic success (Hinojosa et al., 2016).
- Lower levels of STEM engagement and skills in low socio-economic communities (Gunning, Marrero & Morell, 2016; Bray et al., 2021; Devitt et al., 2020).
- ELI's programmes transitioned to virtual delivery in line with national health guidelines in 2020 as a result of COVID-19 pandemic.

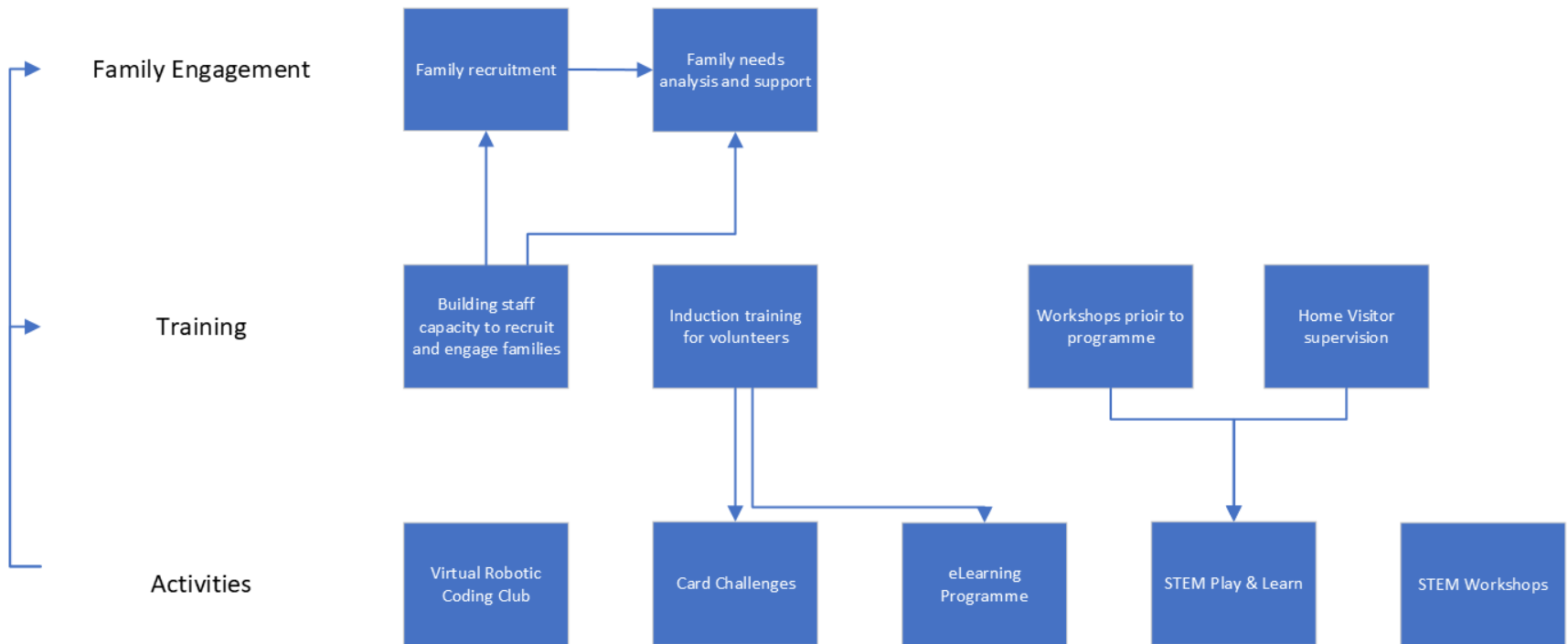


Research Aim

Investigate the impact of introducing eLearning activities on family engagement in a disadvantaged community



STEM Family eLearning Framework



Family Engagement

Family
recruitment

Family needs
analysis and
support

Training

Building staff capacity to recruit and engage families

Induction training for volunteers

Workshops prior to programmes

Home Visitor supervision

Activities

Virtual Robotic
Coding Club

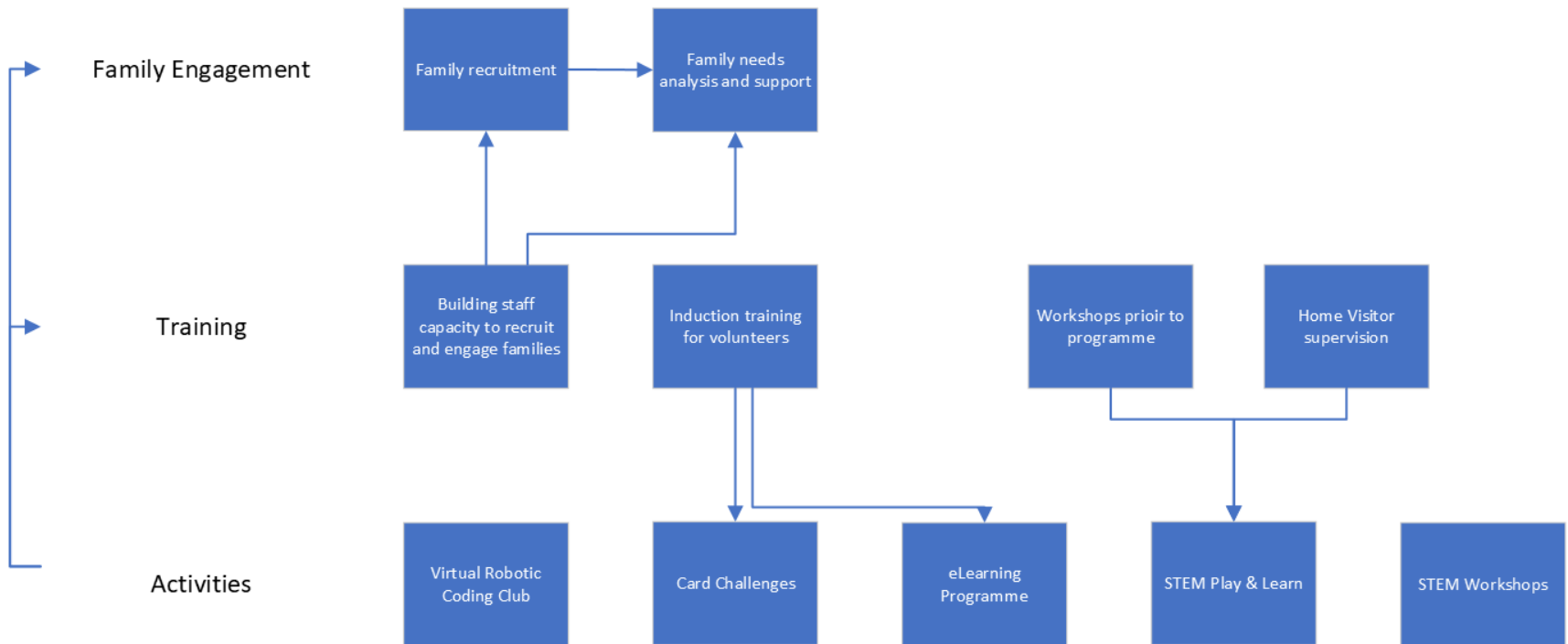
Card
Challenges

eLearning
Programme

STEM Play &
Learn

STEM
Workshops

STEM Family eLearning Framework



Methodology

- The development of the activities, framework and their evaluation follow a community action research approach (Senge & Scharmer 2001; Bleach 2016).
- 167 children and their parents participated in the programmes
- 68 parents and 64 children returned post-programme evaluations.



Results - Participation

Average % participation of parents and children in each activity of STEM Family eLearning Framework

Programme	Participant category	Average % participation
Virtual Robotic Coding	Parents	26%
	Children	68%
Card Challenges	Parents	92%
	Children	92%
STEM Play & Learn	Parents	54%
	Children	54%
STEM Workshops	Parents	92%
	Children	100%

Results - Interest

- ↑ Increase in children's interest in STEM reported by both children and their parents.
- ↑ Increase in parent's desire to support their child's STEM learning



Results – Confidence

Increase in children participating in VCC reporting high levels of confidence and decrease in those reporting little or no confidence.

85% ($n=18$) of parents participating in VCC and eLearning reported higher levels of confidence in their ability to support their child's learning in STEM.

All parents ($n=15$) participating in STEM Play & Learn reported high levels of confidence in supporting their child's learning.

Conclusion

- Fun and enjoyable eLearning activities for children increases confidence and interest in STEM along with developing children's STEM skills.
- Upskilling parents as coaches and co-participants builds their capacity as educators of their children and increases family interest, confidence and participation in STEM
- This research can potentially enhance the mainstreaming and extension of STEM eLearning to disadvantaged communities.



Thank you!

Any Questions?

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References

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