

Early Learning
Languages Australia:
Demand modelling

Final report

Department of Education
and Training

January 2017

Contents

Acronym list.....	i
Executive Summary.....	i
1 Introduction	1
2 Current state of the preschool sector.....	6
2.1 Internet connectivity.....	6
2.2 Hardware capacity	8
2.3 Capability and perception of digital technology	12
2.4 Capability and perception of language and cultural learning	20
2.5 Implications for the ELLA program.....	24
3 Demand for the ELLA program	27
3.1 Expected take-up of the ELLA program	27
3.2 Demand drivers.....	38
4 Implementation considerations.....	43
Reference list.....	46
Appendix A: National survey of preschools	47
A.1 About the Early Learning Languages Australia (ELLA) program	48
A.2 How to complete the survey.....	49
A.3 Introduction	50
A.4 Technology setup in your service.....	52
A.5 Use of digital technology as a teaching tool in your service	56
A.6 Language learning and cultural awareness	63
A.7 Interest in ELLA	65
A.8 Final questions	69
Limitation of our work.....	70

Charts

Chart 1.2 : Demand survey representativeness by state/territory	4
Chart 1.3 : Demand survey representativeness by service type.....	4
Chart 2.1 : Share of survey respondents with an active Internet connection	7
Chart 2.2 : Share of survey respondents with Wi-Fi capabilities	7
Chart 2.3 : Access to Wi-Fi, by service location.....	7
Chart 2.4 : The strength of Internet at your service	8
Chart 2.5 : Does your service have digital technology devices?	10

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Chart 2.6 : If so, are these available for children to use?.....	10
Chart 2.7 : Number of tablets per service.....	10
Chart 2.8 : How were the tablets obtained?.....	11
Chart 2.9 : How were the tablets obtained, by service type?.....	11
Chart 2.10 : Are you planning on purchasing <i>additional</i> tablet devices?	12
Chart 2.11 : Are you planning on purchasing tablet devices?.....	12
Chart 2.12 : Does your service request for children to bring a digital device from home?	12
Chart 2.13 : Does your service have an IT plan or policy?	13
Chart 2.14 : What is the focus of the IT policy?	13
Chart 2.15 : How often do you use digital technology?	14
Chart 2.16 : How often do you use tablet devices?	14
Chart 2.17 : Do you plan on increasing the use of tablet technology at your preschool?.....	15
Chart 2.18 : Common uses of tablets, and how they were ranked ¹	16
Chart 2.19 : How comfortable are educators with using tablets in a learning environment? ...	17
Chart 2.20 : How comfortable are educators with using tablets in a learning environment, by service type?	17
Chart 2.21 : Can tablets be an effective educational tool?.....	18
Chart 2.22 : Using tablets with educational apps in preschools can boost social interaction	19
Chart 2.23 : Tablets can be easily damaged and are not appropriate in a preschool setting	19
Chart 2.24 : Preschool should be free of digital technology	19
Chart 2.25 : Investing in digital technology is a priority for our preschool.....	19
Chart 2.26 : How supportive are parents of increased use of tablet technology?	20
Chart 2.27 : Does your service offer languages other than English as part of your program?... 20	
Chart 2.28 : Has your service offered languages other than English as part of your program in the past?.....	21
Chart 2.29 : Services that have offered a language program, by location.....	21
Chart 2.30 : Services that have offered a language program, by provider type.....	21
Chart 2.31 : Why has your service not offered a language program in the past?	22
Chart 2.32 : How interested is your service in introducing a language program in the next 12 months?	22
Chart 2.33 : Services interested in introducing a language program, by state.....	23
Chart 2.34 : Services interested in introducing a language program, by location	23
Chart 2.35 : Services interested in introducing a language program, by provider type	23
Chart 2.36 : Does your service include learning about other cultures?.....	24
Chart 3.1 : Proportion of services <i>ever</i> engaging with the ELLA program	32

Chart 3.2 : Participation in ELLA over time, after accounting for service withdrawals	34
Chart 3.3 : Participation in ELLA over time, after accounting for service withdrawals and those disengaged with the program	35
Chart 3.4 : Expected ELLA uptake, by state and territory	36
Chart 3.5 : Expected ELLA uptake, by remoteness.....	37
Chart 3.6 : Expected ELLA uptake, by service type	38
Chart 3.7 : Effect on ELLA uptake, service type.....	39
Chart 3.8 : Effect on ELLA uptake, attitude towards tablets.....	40
Chart 3.9 : Effect on ELLA uptake, willingness to pay for apps	40
Chart 3.10 : Factors that may change the likelihood of uptake of the ELLA program	41

Tables

Table 3.1 : Assumed mapping of demand survey response to ELLA uptake.....	28
Table 3.2 : Expected demand for ELLA.....	31

Figures

Figure 1.1 : Overview of demand modelling approach.....	1
Figure 2.1 : Technology adoption curve.....	9

Acronym list

ACT	Australian Capital Territory
BYOD	Bring your own device
ELLA	Early Learning Languages Australia
ESA	Education Services Australia
EYLF	Early Years Learning Framework
IT	Information Technology
NBN	National Broadband Network
NSW	New South Wales
NT	Northern Territory
QLD	Queensland
SA	South Australia
SES	Socioeconomic status
WA	Western Australia

Executive Summary

The Early Learning Languages Australia (ELLA) program is an on-going Australian Government initiative featuring language-based applications (apps) on tablet devices for preschool children. The ELLA program has been trialled by a selection of preschool services across Australia since 2015.

Ahead of the ELLA program becoming nationally available to all preschool services in 2017, Deloitte Access Economics was engaged by the Australian Government Department of Education and Training (the Department) to conduct an analysis of the likely demand and uptake profile of the program. The primary objective of this exercise was to estimate the likely take-up of the program, to ensure that a suitable resource model was in place, and that the Department could respond appropriately to the level of interest from the preschool sector.

The data for the analysis was primarily collected through a survey distributed to nearly every preschool in Australia. The purpose of the survey was to ascertain preschools' internet capacity; and their capabilities and attitudes towards digital technology, language learning and the ELLA program.

Methodology

The approach to estimating the likely demand for the ELLA program is summarised in the figure below, with detail following.

Figure i: Overview of demand modelling approach



1. A **literature review** was undertaken to ensure that the demand modelling approach incorporated the known evidence-base relating to attitudes towards language learning and digital education.
2. A **national survey of preschools** was developed to gather primary data pertaining to the readiness and appetite for the ELLA program among Australian preschools. The survey was distributed to more than 10,000 preschool services nationwide.
3. To augment the survey findings, 19 in-depth **phone consultations** were undertaken with a sample of survey respondents. The purpose of these consultations was to

explore the contextual considerations and deeper reasoning associated with survey findings.

4. The survey and consultation findings were used to inform a ***systematic demand modelling exercise***.
5. A workshop was also held with the Department to validate the demand modelling and preliminary findings.

Representativeness of responses and limitations of the survey

The demand survey was unprecedented in the preschool sector in regard to establishing an in-depth view of digital technology and language learning in Australian preschools. The survey was widely distributed, reaching a high portion of preschools. As such, an analysis of survey responses can reveal valuable insight into the experiences and attitudes of services towards digital technology, language learning and the ELLA program.

The sample achieved was reasonably representative of the sector. However the response rate received (approximately 1,269 responses, or 12% of total preschools, according to ABS data) and the online based mode of delivery do necessitate a degree of caution in interpreting the results. This caution acknowledges the possibility that survey responses may be biased towards services expressing an intent to adopt the ELLA program for the following reasons:

- Those services that did not respond may be systematically different to those that did respond, because they are not interested in language learning or digital technology as a learning tool.
- As the survey was delivered online, services that do not typically utilise digital technology may have been less likely to respond to the survey compared to other services.

Other limitations of the analysis include:

- the ELLA program is a relatively new program in Australia, and there are few known comparable international programs, so there is a lack of precedent that can be cited to assist in validating modelling estimates; and
- survey responses provided by preschools may not match their actual behaviour in practice.

While noting these limitations, the survey analysis and demand modelling does provide many valuable insights informed by a statistically significant sample for the purposes of demand modelling. The approach to the modelling and the findings presented below acknowledge the strengths and limitations of the approach, as outlined above.

Findings from the survey analysis

The key findings from the demand survey are summarised below:

- Preschools responding to the survey had almost universal access to the internet and WiFi (recognising that the survey was undertaken online).

- The presence of digital technology appeared relatively widespread among survey respondents and nearly all preschools used digital technology in some capacity. Tablets were used by approximately 80% of preschools that responded to the survey:
 - 80% of these services allow children to use iPads, suggesting iPads were in relatively wide use among respondent services;
 - A majority of services responding to the survey used their tablets multiple times per week, with almost one third of preschools indicating daily tablet use;
 - 62% of services surveyed planned on increasing the usage of tablet devices at their service; and
 - 82% of services either agreed or strongly agreed that tablets are effective educational tools. Fifty-seven per cent of services reported that their educators were largely comfortable with using digital technology as a learning tool.
- Thirty per cent of respondents offer a program that is intended to support learning of a language other than English at their preschool.
 - Nearly half (47%) of survey respondents cited a lack of experience with language education as the reason for not adopting a language learning program. A further 23% reported that other curriculum areas (such as counting and social awareness) have a higher priority. Some services felt it was more important to focus on learning English.
 - However, 75% of all services responded that they were ‘interested’ or ‘very interested’ in incorporating (or continuing to offer) a language learning program.
 - Some form of cultural awareness education was reported to be present in almost all services that responded to the survey.

Findings from the demand modelling

The demand modelling was undertaken by drawing on selected questions from the demand survey; particularly those questions which pertained specifically to the potential uptake of the ELLA program. Responding services were asked about their likely uptake of the ELLA apps following a brief description of the Australian Government’s intent to make the ELLA program available:

Based on what you currently know about ELLA, if it were available now, would you start using it in your service?

Possible responses to this question are:

- Definitely yes
- Probably
- Unsure
- Probably not
- Definitely not

In order to use information contained in these responses to estimate the potential demand for ELLA, each response was mapped to an actual probability that the responding service

will implement the ELLA program at some point in the future. Table ii presents the mapping of an individual response to the probability of service uptake (this mapping was not made explicit to respondents in the survey).

Table ii: Assumed mapping of demand survey responses to ELLA uptake

Response	Assumed probability of uptake
Definitely yes	100%
Probably	75%
Unsure	50%
Probably not	25%
Definitely not	0%

Aggregating the individual likelihood of participation informs the **proportion of services** that are expected to engage with the ELLA program at some point in the future.

Further, a second question, ascertaining the timeline over which services expected to take-up the ELLA program, informed the proportion of services that are expected to engage with the ELLA program **each year**. This allowed results to be modelled over time.

Recognising the uncertainties with the modelling identified earlier, as part of the demand modelling exercise, three scenarios were modelled:

- An upper bound scenario – this scenario assumes that preschools will behave as they have indicated in their survey response, and assumes the sample is representative, so the results are extrapolated to the entire preschool sector.
- An adjusted upper bound scenario – this scenario makes adjustments based on the likelihood that the costs associated with the program will inhibit uptake. This adjustment was based on a survey question that asked services about whether incurring a cost in introducing ELLA would discourage them from adopting the program. This scenario is considered to represent an ‘adjusted’ upper bound as it does not control for non-response bias.
- A lower bound scenario – this scenario assumes the reason services have not responded to the survey is that they are not interested in adopting the ELLA program, hence under this scenario all services not responding to the survey are assumed not to take up the ELLA program.

When interpreting the results, it is considered most likely that the final uptake will be between the adjusted upper bound estimate, and the lower bound estimate.

The modelling results presented below reflect three separate cases, across which the resourcing requirement for the Department will differ.

- Case 1: The estimated total *cumulative* participation in the ELLA program. This figure will reflect all sites that have ever participated in the ELLA program.
- Case 2: The estimated *ongoing* participation in the ELLA program. The ongoing participation rate reflects that some services will sign-up to commence the ELLA program, but will withdraw from the program.
- Case 3: The estimated *active* participation in the ELLA program, which reflects the withdrawal rate (as above), but also accounts for those services that disengage with

the program (by ceasing to use the apps, but not formally withdrawing from the program).

Of these cases, the second case (the estimated ongoing participation, after controlling for the withdrawal rate), is the most relevant given the purpose of the modelling was to estimate demand for ELLA among services that may require resourcing or support. Even a disengaged service would be expected to require some resource allocation, to encourage their re-engagement.

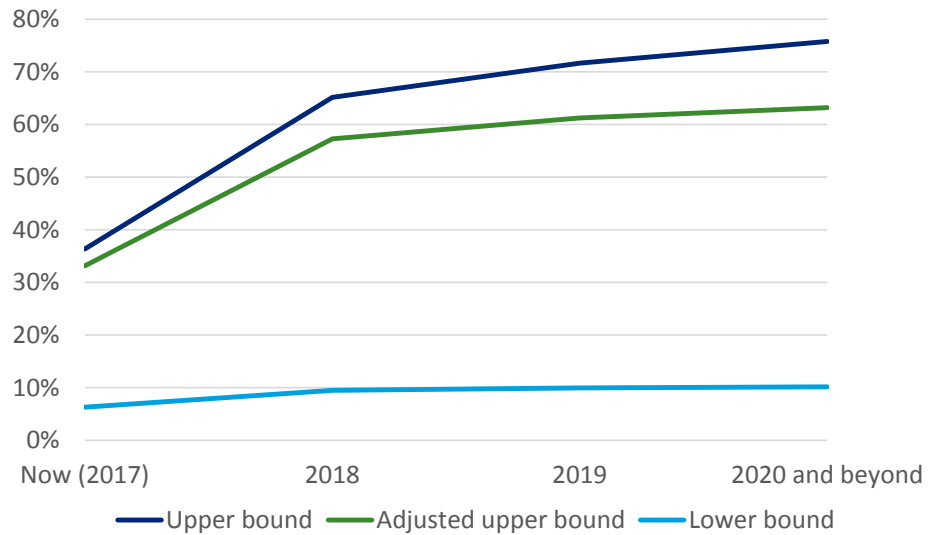
Case 1: Estimated total cumulative participation in the ELLA program

Modelling results, indicating the total number of services expected to commence the ELLA program, are shown in Chart i. These results illustrate the total number of preschools estimated to have *ever* engaged with the ELLA program at a given time (it does not factor in any attrition). This estimate is higher than the number of services that demonstrate *ongoing*, or *active* use of the ELLA program due to potential withdrawal or disengagement, as explored below.

The upper bound scenario estimates immediate ELLA uptake (uptake in 2017) across the sector to be 36% of services, while the adjusted upper bound scenario reduces this estimate of demand to 33% of services. The lower bound estimate reduces the immediate estimated demand for the ELLA program to just more than 9% of services.

Further analysis traces the expected rate of uptake from 2017 to 2020. Chart i suggests that preschools are largely expected to take up the ELLA program in 2017 or 2018, with the increase in preschools participating in the program expected to be more modest through to 2020 and beyond. Under the upper bound, ELLA uptake across the sector in 2020 and beyond is expected to 76% of services, while the adjusted upper bound scenario reduces this estimate of demand to 63% of services. The lower bound estimate reduces the estimated demand for ELLA to just more than 9% of services.

Chart i: Cumulative participation in the ELLA program over time



Source: Deloitte Access Economics analysis of ELLA demand survey

Case 2: Estimated ongoing participation in the ELLA program (after adjusting for withdrawal)

These results illustrate the estimated demand for the ELLA program after adjusting for the likelihood that some services will withdraw from the program over time. The results shown below are considered to be the most likely to occur relative to the other two cases presented, and are most relevant to the Department in that they best represent the number of services that would require some form of resourcing to support their involvement in the program.

The results shown in Chart ii below recognise the likelihood that some services that sign up for the ELLA program will subsequently withdraw and no longer require any resourcing or support. The assumed rate of withdrawal of 18% is based on experience of the 2016 ELLA trial in which 64 out of 349 formally withdrew.¹ Analysis of the 2016 ELLA trial indicates services withdrew from the trial because they²:

- did not fully understand the requirements involved in participating in the expanded trial in 2016, especially in relation to the introduction of the Bring Your Own Device (BYOD) model;
- faced unexpected complexities in implementing the program (such as difficulty obtaining the required tablet hardware or the timing of implementation);

¹ It should be noted that in applying the withdrawal rate from the 2016 trial, the withdrawal rate may not be entirely reflective of what is expected in future years. This is because in 2016, the ELLA program moved from the initial trial phase in 2015 to the second trial phase, where services were required to bring their own devices.

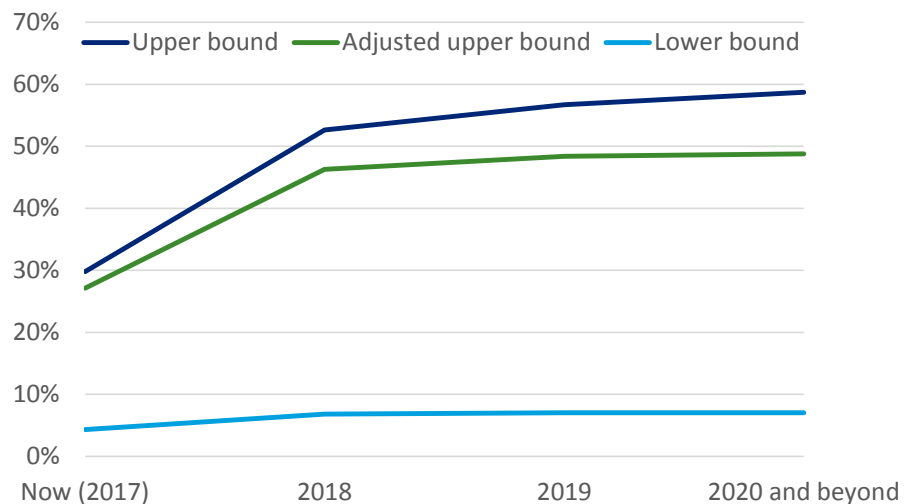
² It should be noted that only seven services (out of 64 that withdrew from the trial) withdrew *after* using the apps.

- signed up to the program without fully informing the educators who would be implementing ELLA about the program requirements; or
- decided to withdraw from the program after starting due to staffing changes or if educators find the ELLA program does not fit with the rest of their learning program.

The upper bound scenario estimates immediate ELLA uptake (uptake in 2017) across the sector to be 30% of services, while the adjusted upper bound scenario reduces this estimate of demand to 27% of services. The lower bound estimate reduces the immediate estimated demand for the ELLA program to just more than 4% of services.

Consistent with the case above, Chart ii suggests that preschools are more likely to take up the ELLA program in 2017 or 2018, with subsequent growth expected to be more modest through to 2020 and beyond. Under the upper bound, ELLA uptake across the sector in 2020 and beyond is expected to be 59% of services, while the adjusted upper bound scenario reduces this estimate of demand to 49% of services. The lower bound estimate reduces the estimated demand for ELLA to just more than 7% of services. For reasons articulated above, the most likely outcome is for uptake in 2020 and beyond to lie between 7% and 49% of all services.

Chart ii: Ongoing participation in the ELLA program (adjusting for withdrawal)



Source: Deloitte Access Economics analysis of ELLA demand survey

Case 3: Estimated active participation in the ELLA program (including withdrawal and disengagement)

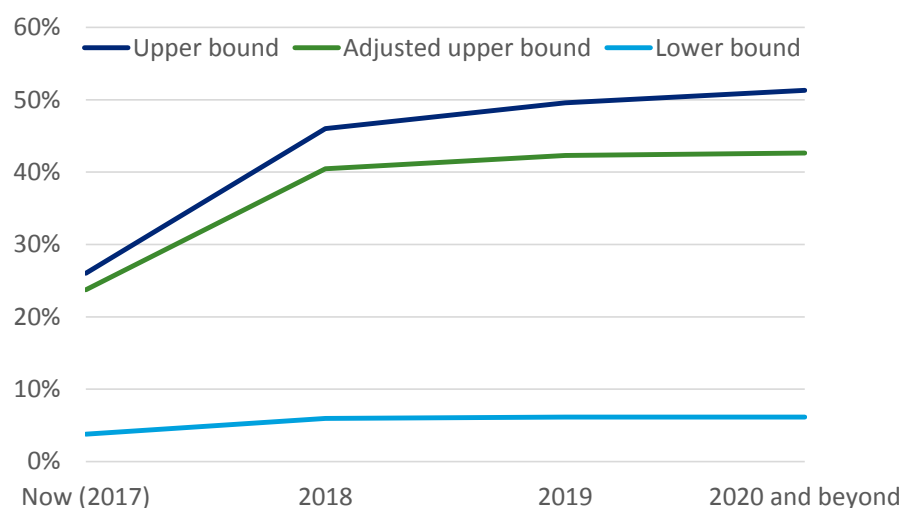
The above estimation of service withdrawal assists in determining the level of resourcing required to support the ELLA program following national expansion. When a service withdraws, it no longer requires any resourcing effort.

However, some services may not formally withdraw, but will disengage from the ELLA apps and stop using them. Depending on the approach taken to managing services potentially withdrawing from the program, these services may not require any resourcing effort. Alternatively, they may require follow-up communication and support to encourage re-engagement.

Moreover, as the withdrawal rate for one year is the only available reference point for the above assumption regarding withdrawal, consideration of disengagement may provide a further guide to the actual level of attrition that could be expected.

For these reasons, a third set of results was produced, after making a slight modification to the estimated withdrawal rate. The alternative withdrawal rate includes services that not only formally withdrew from the 2016 ELLA trial, but also services that had not used the ELLA apps for the six weeks prior to the trial conclusion.³ There were an estimated 36 sites (10%) that did not use the apps over this time period.

Chart iii: Active participation in the ELLA program (adjusting for withdrawal and disengagement)



Source: Deloitte Access Economics analysis of ELLA demand survey

The upper bound scenario estimates immediate ELLA uptake (uptake in 2017) across the sector to be 26% of services, while the adjusted upper bound scenario reduces this estimate of demand to 24% of services. The lower bound estimate reduces the immediate estimated demand for the ELLA program to be 4% of services.

Under the upper bound, ELLA uptake across the sector in 2020 and beyond is expected to be 51% of services, while the adjusted upper bound scenario reduces this estimate of demand to 43% of services. The lower bound estimate reduces the estimated demand for ELLA to just more than 6% of services. As with the previous estimates, the most likely outcome is for uptake in 2020 and beyond to lie between 6% and 43% of all services.

Other factors that influence uptake

The modelling also estimates the factors that may increase or decrease the likelihood of program uptake among preschool services. The analysis reveals:

³ For the purposes of the analysis, the trial conclusion was taken to be 20 November 2016.

- Services that indicated a positive attitude towards tablets as a learning tool were also found to be more likely to adopt the ELLA program based on their survey responses.
- Services that indicated they were willing to meet a cost in order to participate in the ELLA program were also found to be more likely to adopt the ELLA program based on survey responses.

The final uptake will also depend on several external factors, as the Department has a degree of control over the final demand. This includes how the ELLA program is marketed and the stakeholder engagement strategy. This is discussed in greater in the implementation considerations.

Implementation considerations

Based on survey analysis, and the modelling results, there are a range of factors the Department should consider in preparation for the ELLA program becoming available nationally. These include:

- **Guidance and support** – respondents with greater experience and confidence in applying digital technology were more likely to adopt the ELLA program. It is therefore suggested that the Department provide guidance and support in an effort to increase capabilities within the sector with digital technology as a learning tool. This is also likely to reduce ELLA program attrition rates over time. There also needs to be adequate support in place for services that encounter difficulties or that have questions. The program manager appointed by the Department, Education Services Australia (ESA) has been providing support to services over the two years of the ELLA trial, and are expected to continue to provide support in the future years.
 - The educator workshops offered as part of the 2015 and 2016 trial have proven to be valuable tools to support educators, and should continue as the program is expanded nationally. It is noted that educator workshops are planned for the 2017 and 2018 ELLA program.
- **The variability in the expected uptake of the service** – the modelling suggests there is a significant amount of uncertainty surrounding the estimated uptake of the ELLA program. As such, it will be prudent for the Department to have sufficient flexibility to draw upon resourcing that would support up to 49% of services adopting the program within the next 4 years.⁴ This resourcing should be able to be scaled up or down, recognising the inherent uncertainty in the anticipated demand profile. The program manager (ESA) is also a potentially valuable resource that could respond flexibly to changing need, noting this is likely to require agreement with the Australian Government.
- **Stakeholder engagement** – key stakeholders (such as state education authorities, peak bodies and large providers) can act as key sources of information for many preschool providers. They can also help manage risks associated with the program. The Department should ensure a carefully planned approach to stakeholder engagement and management is in place.

⁴ This is the adjusted upper bound estimate for service uptake, after accounting for services withdrawing from the program. This figure has been chosen as it is considered the most relevant for the Department in terms of their resourcing commitment.

- **Demand management** – the Department has the ability to contribute to effective management of demand, in endeavouring to ensure the take up is sustainable and occurs at a level that supports program objectives. For example, the level of marketing and communication is likely to influence this, as will the role assigned to some stakeholders. There is also scope for flexibility in the approach to managing services that disengage from the ELLA apps. The Department and ESA (or equivalent) may choose to offer support to services that disengage, or if they were resource constrained, could choose not to.
- **Service capacity to participate** – based on the survey results, the level of interest in such a program and the level of technology readiness are likely to be reasonably good. However, this will vary between services. While the Department has arrangements in place to provide funding to support some services in purchasing tablet devices, mechanisms should also be in place to carefully monitor the spread of uptake.
- **Emerging competition for educational apps** – as digital technology as a learning device in preschools grows, so might the availability of high-quality educational apps. Given national guidelines relating to the appropriate amount of screen time for young children and the emerging public debate on this topic, the proliferation of digital learning through apps and tablets may affect the ELLA program, and is likely to require careful monitoring from a broader policy perspective among both the Australian Government and state and territory authorities.

Deloitte Access Economics

1 Introduction

The Early Learning Languages Australia (ELLA) program is an ongoing Australian Government initiative featuring language-based applications (apps) on tablet devices for preschool children. The ELLA program has been trialled by a selection of preschool services across Australia since 2015.

Prior to the ELLA program becoming nationally available to all services in 2017, Deloitte Access Economics was engaged by the Australian Government Department of Education and Training (the Department) to conduct analysis of the likely demand and uptake profile of the program going forward.

Demand modelling approach

The approach to estimating the likely demand for the ELLA program is summarised in the figure below, with detail following.

Figure 1.1: Overview of demand modelling approach



1. A **literature review** was undertaken to ensure that the demand modelling approach incorporated the known evidence-base relating to attitudes towards language learning and digital education.
2. A **national survey of preschools** was developed to gather primary data pertaining to the readiness and appetite for the ELLA program among Australian preschools. The survey was distributed to more than 10,000 preschool services nationwide.
3. To augment the survey findings, 19 in-depth **phone consultations** were undertaken with a sample of survey respondents. The purpose of these consultations was to explore the contextual considerations and deeper reasoning associated with survey responses.
4. The survey and consultation findings were used to inform a **systematic demand modelling exercise**.
5. A workshop was also held with the Department to validate the demand modelling methodology and preliminary findings.

Survey representativeness

The Department provided Deloitte Access Economics with data on the location and type of 10,426 services that offer preschool programs across Australia. ABS data indicates there are approximately 10,475 preschool services across Australia⁵, which suggests the information provided by the Department closely matched the number and distribution of preschools around Australia.⁶

The demand survey was distributed to all email addresses in the database provided by the Department, and reached approximately 8,000 with a valid address. However, as the survey was advertised through sector newsletters and websites, the reach may have been broader.

Approximately 12% of services commenced the survey (1,269 from the initial 10,475). The descriptive summary of survey responses (outlined in Section 2), make use of all valid responses to each question. Therefore, up to 1,269 responses were possible to any given question in Section 2.

However, not all responding services completed the survey. Of the services that began the survey, 65% (828) completed enough questions to valuably contribute to the demand modelling exercise (discussed in Section 3).

Despite the broadly representative sample, there are two potential limitations linked to the survey distribution process that impact the confidence with which survey findings can be attributed to the preschool sector as a whole.

- Firstly, it is possible that services who are more interested in participating in the ELLA program were more likely to respond to the survey, as they found the subject matter and concept of the program engaging. A **non-response bias** therefore arises if services who did not respond to the demand survey are systematically less likely to want to engage with the ELLA program once it is made nationally available.
- Secondly, the survey was primarily distributed through online means – drawing on email distribution and reminders, online newsletter reminders and website advertisements. Any preschools that do not engage with digital technology may have been less likely to take up the opportunity to participate in the survey – creating a **positive bias towards digital technology** in the sample.

Broader limitations with the analysis include:

- the ELLA program is a new program in Australia, so there is a lack of precedent that can be cited to assist in validating modelling estimates; and

⁵ Australian Bureau of Statistics (2016), *Preschool Education, Australia, 2015*, Table A2 Number of service providers with an early childhood education program delivered to children aged 4 and 5 years; data cube: Excel spreadsheet, cat. no. 4240.0, < <http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4240.02015?OpenDocument>>

⁶ It should be noted that the ABS data pertains to preschools in Australia in 2015, and therefore may not be reflective of the current number and distribution of preschools across Australia. To the extent this has materially changed since 2015, the representatives of the sample may change slightly.

- survey responses provided by preschools may not match their actual behaviour in practice, particularly if respondents have overrated their desire and ability to implement the ELLA program.⁷

Due to these limitations in the survey sample, it is likely that the survey responses overstate the technological readiness and demand for the ELLA program. This bias has been partly moderated for within the demand modelling, but should be considered when interpreting the capability of the preschool sector as discussed in Section 2. Despite these limitations, the sample size for both data analyses provides a reasonable level of confidence that the survey responses can be assumed to be indicative of the responses by the entire sector.

Representativeness by dimension

The representativeness of survey responses needs to be considered in light of how survey responses might vary across preschools with different characteristics or attributes within Australia. The representativeness of providers is important as only if responses are representative can specific findings from the survey analysis be extrapolated into general observations about the entire preschool sector.

The sample can be considered to be representative if it sufficiently includes providers of each characteristic or attribute across which survey responses can be expected to systematically differ. For example, it may be the case that educator comfort with digital tablets varies across provider types (depending on the time children spend at each service); or the desire to introduce language learning programs could vary with service location, depending on the contextual background of the service. Therefore, it is necessary to check that the sample adequately includes (among other things) sufficient services across different provider types and locations.

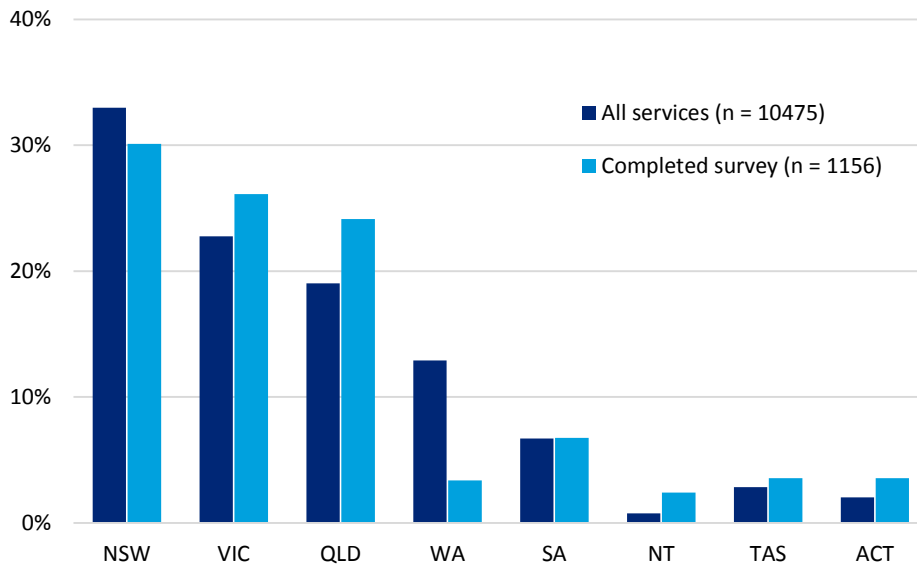
In order to assess the survey representativeness across these domains, the service responses needed to be matched to administrative data on all preschool services in Australia. The email address of responding services was used to match data, with 66% (543) of services that completed the survey providing a valid email address that was able to be matched. This is an important caveat, and implies that results presented at a more disaggregated level (i.e., by smaller geographic regions) will be less reliable.

Survey responses were broadly representative across the states (Chart 1.2). Relative to the average, considerably fewer services in New South Wales (NSW) and, in particular, Western Australia (WA), responded to the demand survey, with just 6% of services in WA commencing the survey.⁸ In contrast, there was an over-representation of services from Queensland (QLD), the Northern Territory (NT), Tasmania, and the Australian Capital Territory (ACT). Interestingly, over a quarter of services in Tasmania responded to the survey, even though Tasmania had the lowest expected uptake across the states (according to the demand modelling).

⁷ See, for example, Kahneman, D (2011); *Thinking Fast and Slow*, Farrar, Straus and Giroux for an explanation of why survey responses do not always match behaviour in actuality.

⁸ Due to a delay in research approval within WA, the survey was only open to WA services for two weeks. It is expected that this would have significantly impacted the ability of services in WA to respond to the demand survey.

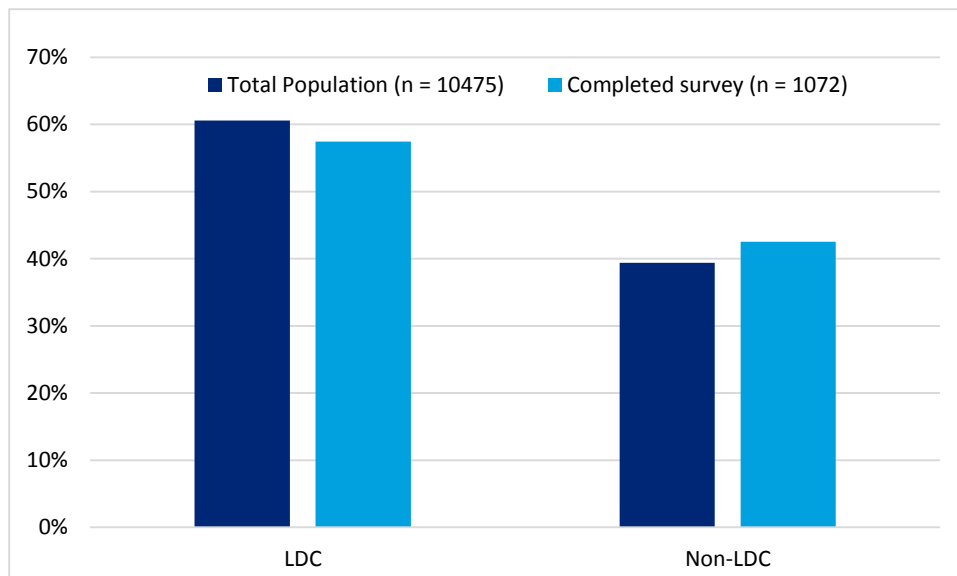
Chart 1.2: Demand survey representativeness by state/territory



Source: Deloitte Access Economics analysis of ELLA Demand survey responses and ABS (2015) data

By service type, responses to the demand survey were marginally under-represented in long day care (LDC) services, relative to stand-alone services and those attached to schools (Chart 1.3). Approximately 57% of survey responses were from LDC services, whereas LDC services represent nearly 61% of the entire preschool population.

Chart 1.3: Demand survey representativeness by service type



Source: Deloitte Access Economics analysis of ELLA Demand survey responses and ABS (2015) data

Note: Not all services responded to this question, so the number of completed responses does not match total survey completions.

All differences observed above in the representativeness across various dimensions were statistically significant.⁹ In order to account for these differences, modelling of the expected take-up of the ELLA program incorporated weights (outlined in Section 3.1). So, for example, responses from NSW were weighted relatively higher due to under-representation in the survey.

Despite statistically significant differences in the characteristics of responding services relative to the sector across Australia, results are not likely to be substantially affected. As discussed in further detail below, the estimated uptake of the ELLA program at an aggregate level does not considerably change if response summaries are adjusted to account for representativeness across observable characteristics of services.

However, as a relatively large proportion of the 828 services that responded to survey demand questions was not able to be matched to administrative data, results presented at a more disaggregated level (i.e., by smaller geographies) are more likely to be subject to bias.

Report structure

The remainder of the report is structured as follows:

- Section 2 provides an overview of the current state of the preschool sector as this relates to capacity and willingness to adopt the ELLA program – including internet connectivity, hardware capacity, and the capabilities and perceptions within preschools towards digital technology and language learning as part of the learning program.
- Section 3 builds upon the capability findings of Section 2, to model the estimated demand for the ELLA program – including an analysis of where and in what circumstances services are most likely to partake in the program.
- Section 4 considers the findings of the preceding sections with reference to the implications for the national availability of the ELLA program.

⁹ These were statistically different at a 95% confidence level, but not at a 99% confidence level.

2 Current state of the preschool sector

The ELLA program relates to both language learning and digital technology in a preschool setting. While the benefits of language learning and digital technology in preschool education are generally well established¹⁰, the extent to which these tools are currently applied within services varies across the sector. A successful implementation of the ELLA program is therefore, in part, dependent on the sector's existing capabilities and attitudes towards digital technology as a learning device, and the understanding of the benefits of language learning in early childhood.

This section explores the readiness and the sentiment of the sector towards the key pillars of the ELLA program. In particular, it examines:

- the internet connectivity of preschools;
- the potential availability of the requisite hardware for preschools;
- the appetite for using digital technology as a learning tool; and
- attitudes towards language learning within preschools.

Note that throughout this section, charts are used to illustrate survey responses. A cross denotes 'no' (or a negative response); a tick denotes 'yes' (or a positive response), while a dash denotes 'unsure'.

2.1 Internet connectivity

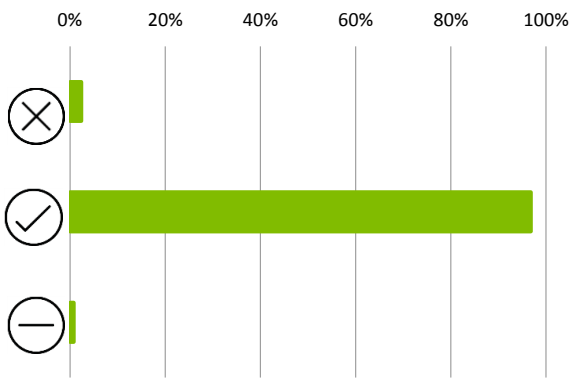
The ELLA program is delivered through apps on a tablet device that need to be downloaded to allow services to participate in the program. An active internet connection is therefore required, to allow the apps to be installed on a digital device. This section explores services' readiness for the ELLA program in relation to internet connectivity across the sector.

Chart 2.1 below demonstrates that nearly every preschool that responded to the survey has an active internet connection.¹¹ Chart 2.2 indicates that of those services with an internet connection, 95% have WiFi capabilities. This indicates that almost all survey respondents possess the internet connectivity that is required to participate in the ELLA program.

¹⁰ See for example Bialystok, E & Craik, F. (2010). 'Cognitive and Linguistic Processing in the Bilingual Mind', *Current Directions in Psychological Science* 19: 19; Griva, E. & Sivropoulou, R. (2009), 'Implementation and Evaluation of an Early Foreign Language Learning Project in Kindergarten', *Early Childhood Education Journal*, Vol 37; or Jones Diaz, C. (2014), 'Institutional, material and economic constraints in languages education : unequal provision of linguistic resources in early childhood and primary settings in Australia', *International Journal of Bilingual Education and Bilingualism*, Volume 17, Number 3.

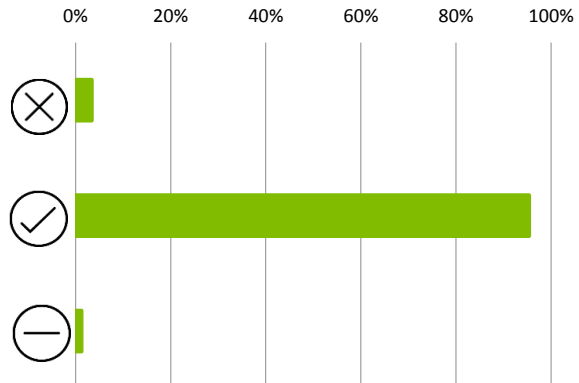
¹¹ It should be noted that as the survey was an online survey, the results are likely to overstate the internet capacity of the sector as a whole. Further, as outlined in Section 1, caution is needed in generalising what the results from this survey imply for the sector.

Chart 2.1: Share of survey respondents with an active internet connection



Source: Deloitte Access Economics ELLA Demand Survey

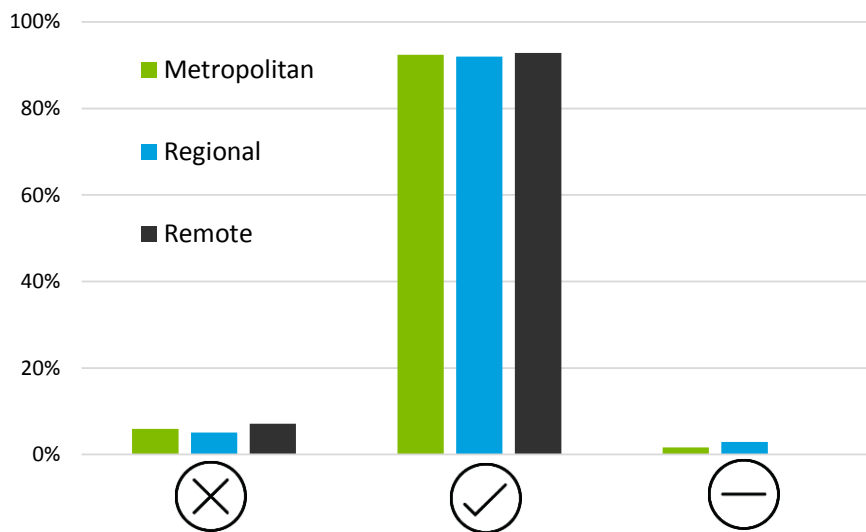
Chart 2.2: Share of survey respondents with WiFi capabilities



Source: Deloitte Access Economics ELLA Demand Survey

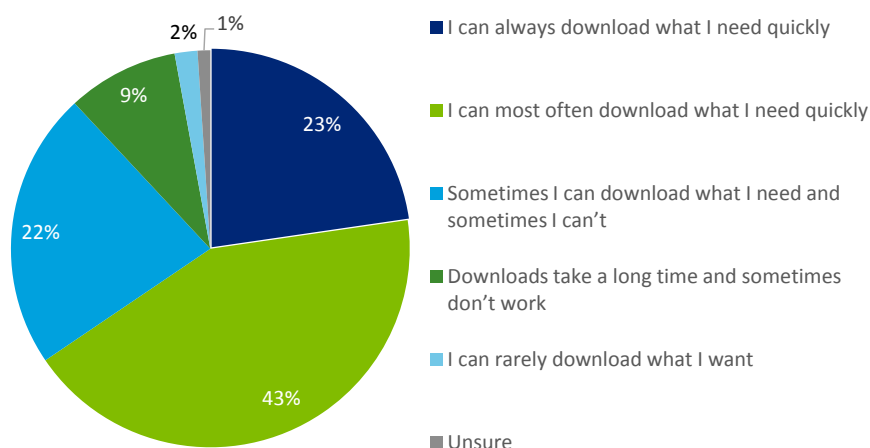
As can be seen in Chart 2.3, the survey results suggest the proportion of services with WiFi capabilities does not vary by location. This finding was supported during further discussions with sites, where regional sites reported access to the NBN had provided them with a strong internet connection.

Chart 2.3: Access to WiFi, by service location



Source: Deloitte Access Economics ELLA Demand Survey

While nearly all respondents are able to access to the internet, there is variation with the perceived *quality* of each site's internet connectivity (Chart 2.4 below). A majority of preschools (65%) reported they can always or often download what they want in a reasonably quick timeframe. Only 9% of respondents reported that downloads take a long time, with only 2% stating that they can rarely download what they want.

Chart 2.4: The strength of internet at your service

Source: Deloitte Access Economics ELLA Demand Survey

During consultations, several preschools noted that they were satisfied with their internet speed for its current use. However, these preschools also stated that the quality of their internet connection was insufficient to properly use educational apps. This may not have repercussions for the ELLA program, as the ELLA apps do not require an active internet connection while being *used*; they only require an internet connection to be *downloaded* (or if usage data needs to be uploaded to the ELLA data storage server).

The availability of support for connectivity issues was also reportedly inconsistent across interviewees and survey respondents. For example, some preschools reported receiving technical support as soon as they experienced internet connectivity issues; other preschools reported having to wait before receiving support to fix problems with their internet connection.

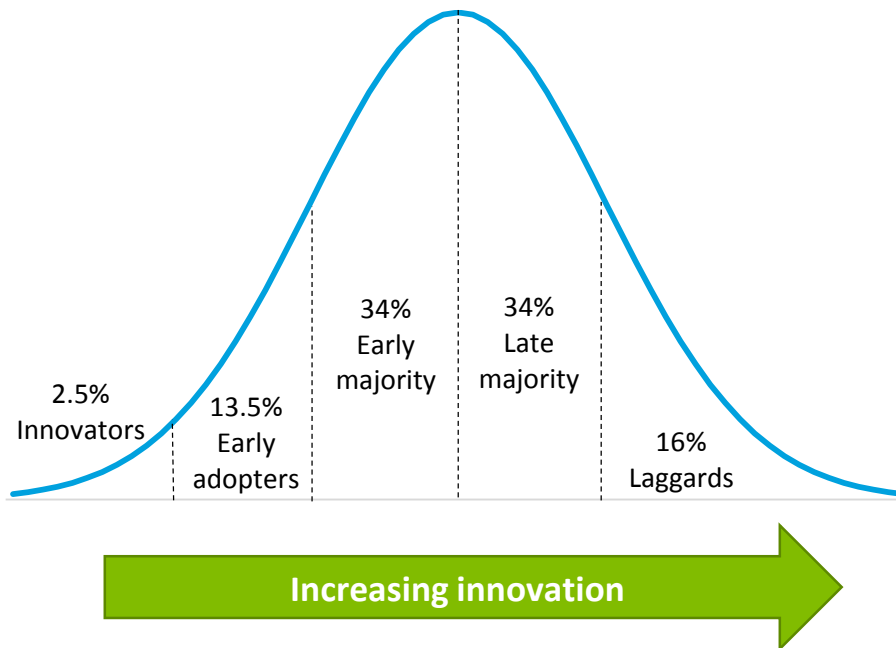
2.2 Hardware capacity

The ELLA program is based on the use of digital technology. The existing use of digital technology, and in particular tablets, is therefore relevant in considering how ready preschool services are for the adoption of ELLA. Closely related considerations are the ability of services to acquire new tablets, and educators' familiarity and comfort with digital technology as a teaching tool.

Preschools' use of new technology (such as tablets) should be considered with reference to the technology adoption curve – see Figure 2.1.

The curve describes how new technology is typically adopted, particularly noting the relative speed of adoption differs depending on an individual's disposition to new ideas. Only a small portion of the population is likely to be innovators in adopting new technology, and this is usually restricted to those who have the resources and desire to take risks. Over time, new technology is slowly adopted in greater numbers, as the technology becomes more widely understood and increasingly economically viable.

Figure 2.1: Technology adoption curve



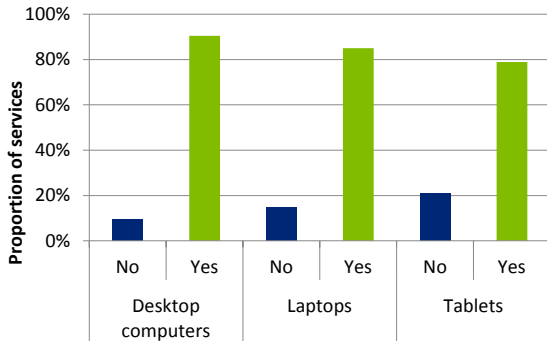
Source: adapted from Rogers (1962); *Diffusion of Innovations*.

This section therefore explores the access to, and use of, digital technology in early childhood settings, and how this is anticipated to change in the future, based primarily on survey responses.

Existing digital hardware in preschools

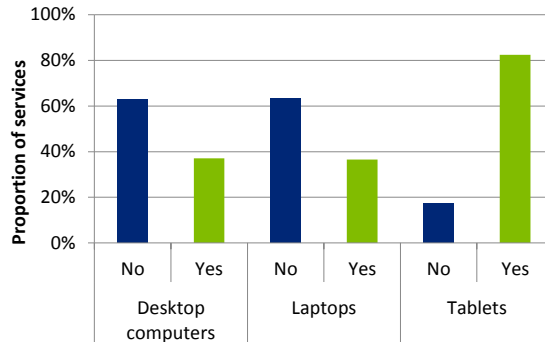
Nearly every preschool that responded to the survey reported owning at least one type of digital device (either a desktop computer, a laptop, or a tablet). Tablets were the least prevalent digital device used, but 80% of services still had access to at least one tablet (Chart 2.5). Desktop computers and laptops were typically not made available for children to use (less than 40% of services with these devices allowed children to use them), while more than 80% of sites with tablets made them available for children to use (Chart 2.6).

Chart 2.5: Does your service have digital technology devices?



Source: Deloitte Access Economics ELLA Demand Survey

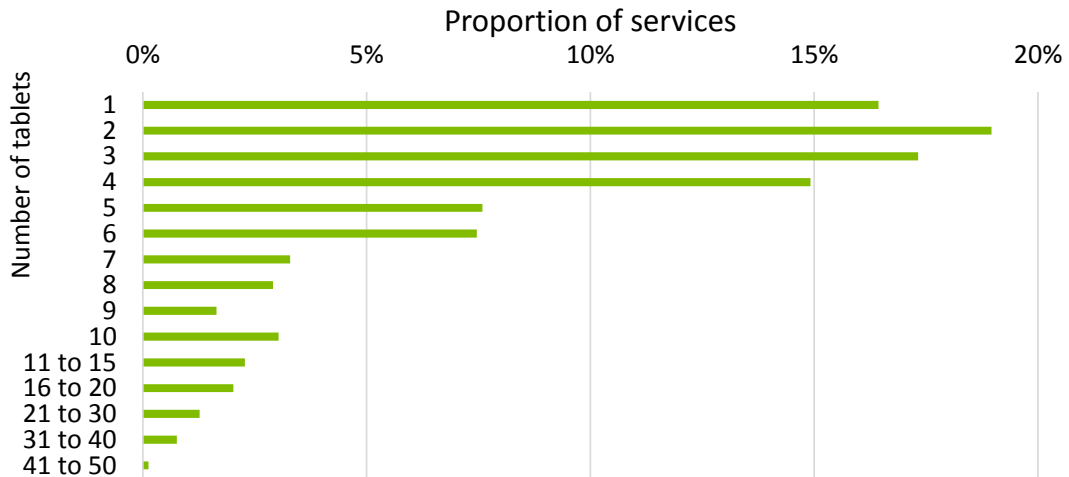
Chart 2.6: If so, are these available for children to use?



Source: Deloitte Access Economics ELLA Demand Survey

Focussing specifically on tablets given their importance in the ELLA program, 68% of survey respondents reported they had less than five tablets available within their service (Chart 2.7). Two or three tablets (19% and 17% of all respondents, respectively) were the most common number of tablets owned by services. Per child, less than 3% of services that responded to this question had at least one iPad per child. Over half (60%) of preschools had one iPad for five (or more) children, while nearly half of the preschools that responded to these questions had only one iPad for ten (or more) children.

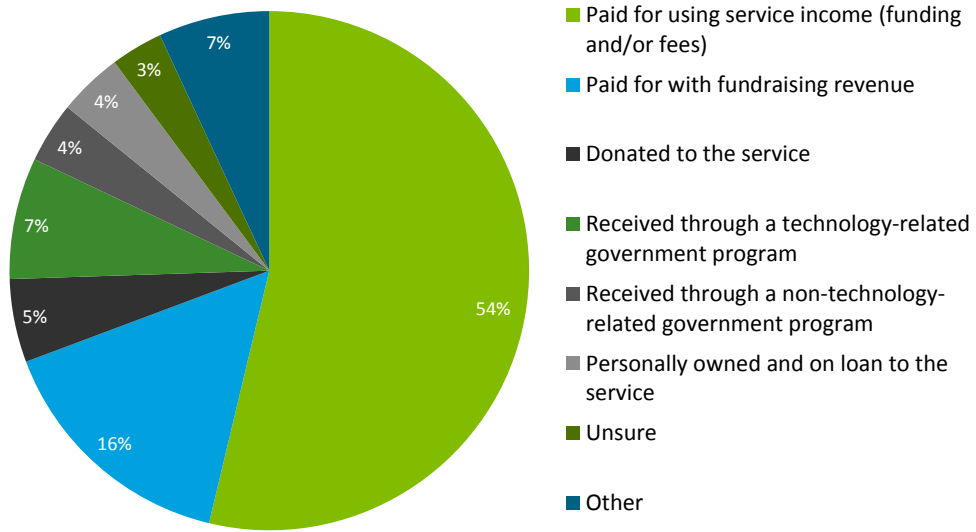
Chart 2.7: Number of tablets per service



Source: Deloitte Access Economics ELLA Demand Survey

The majority of tablets within preschools were obtained using service income (drawn from core funding or fees), while 11% were obtained through government grants, donations or other sources (Chart 2.8).

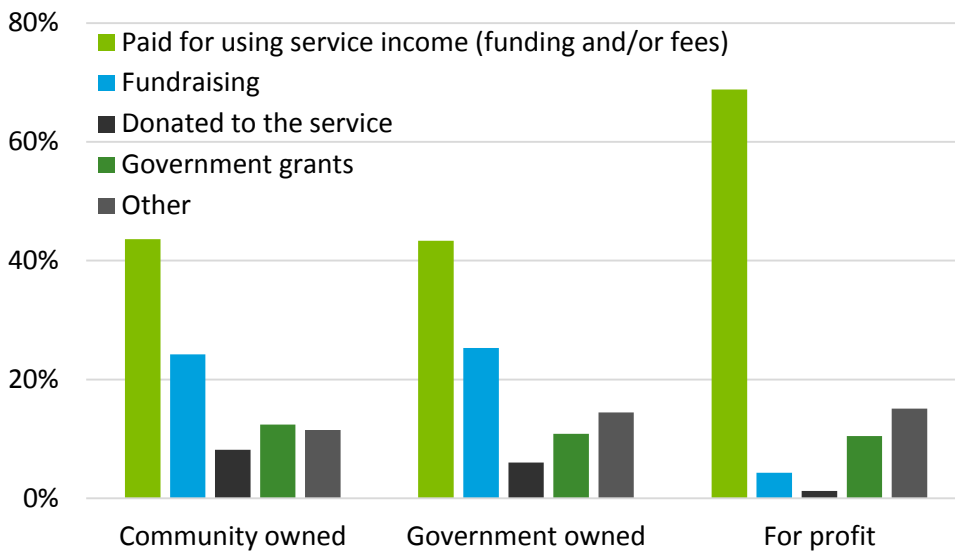
Chart 2.8: How were the tablets obtained?



Source: Deloitte Access Economics ELLA Demand Survey

Examining further the issue of how tablets were obtained, Chart 2.9 shows that for-profit services are more likely to purchase tablets, while community and government-owned services are relatively more likely to undertake additional fundraising activities to purchase these devices. Further, approximately 10% of services (equally distributed between government and non-government services) relied on government grants to pay for their tablets.

Chart 2.9: How were the tablet devices obtained, by service type?



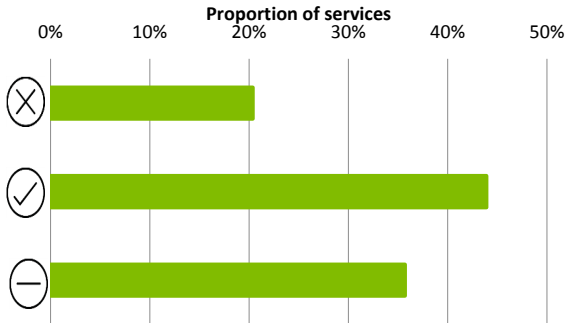
Source: Deloitte Access Economics ELLA Demand Survey

Planned tablet purchases

The charts below consider the intent of services regarding the purchase of tablet devices. Chart 2.10 shows that of those survey respondents that *already own tablets*, more than 40% intend to purchase additional tablets, with a further 35% not ruling out future purchases. Chart

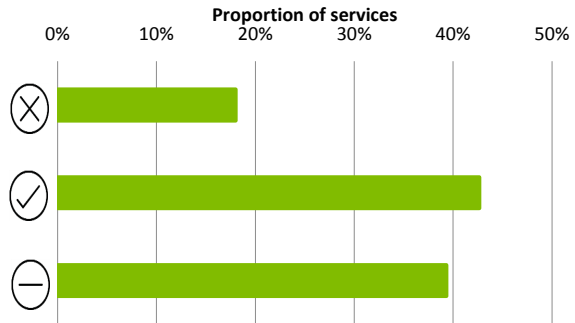
2.11 shows that of those services that *do not own tablets*, more than 40% are planning on purchasing at least one, while another 40% are undecided.

Chart 2.10: Are you planning on purchasing additional tablet devices?



Source: Deloitte Access Economics ELLA Demand Survey

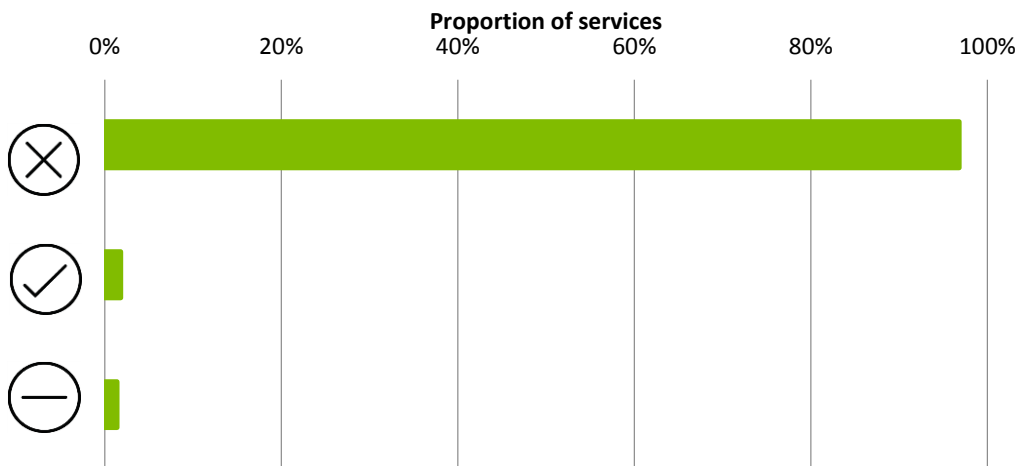
Chart 2.11: Are you planning on purchasing tablet devices?



Source: Deloitte Access Economics ELLA Demand Survey

Finally, models in which children or families supplied devices to use during preschool time are not prevalent. Chart 2.12 suggests that nearly 100% of services do not access digital technology by relying on children bringing devices from home.

Chart 2.12: Does your service request for children to bring a digital device from home?



Source: Deloitte Access Economics ELLA Demand Survey

2.3 Capability and perception of digital technology

Educators who are confident in applying digital technology as a teaching tool are more likely to be able to implement the ELLA program smoothly. Those who encounter more difficulties in implementing ELLA may have a lack of experience with digital technology, or a negative perception of digital technology in early childhood education. The current capabilities and attitudes of early childhood educators are therefore an important consideration in the expansion of the ELLA program.

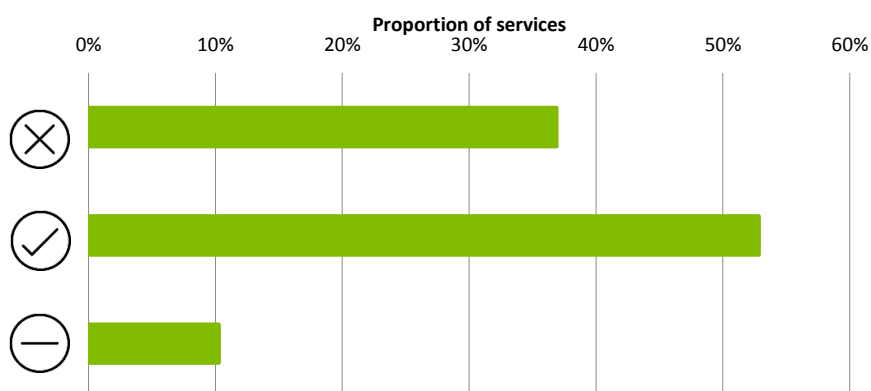
To determine whether the existing capabilities and attitudes of preschools represent a possible barrier to the success of the program, the demand survey explored the capabilities of, and perception towards, digital technology among preschools.

This section is divided into two parts, first analysing educators’ skills and experience with tablets, and second examining their attitudes towards digital technology in the classroom.

Educator experience with digital technology

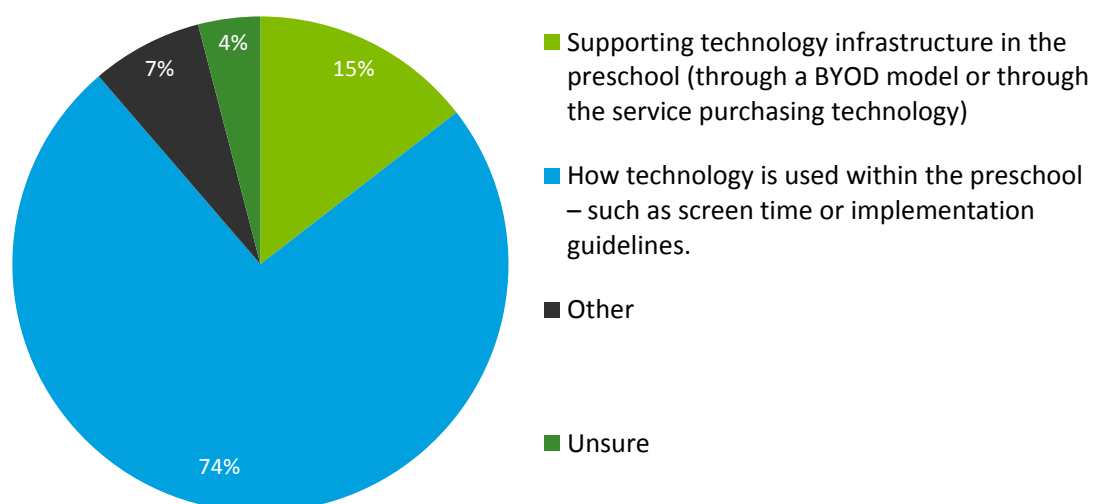
Over half (53%) of all preschools that responded to the survey reported that their service has an IT plan or policy (Chart 2.13). The majority of these documents reportedly focus on discussing how technology should be used in the preschool, including guidance towards screen time, and best methods for use (Chart 2.14)

Chart 2.13: Does your service have an IT plan or policy?



Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.14: What is the focus of the IT policy?

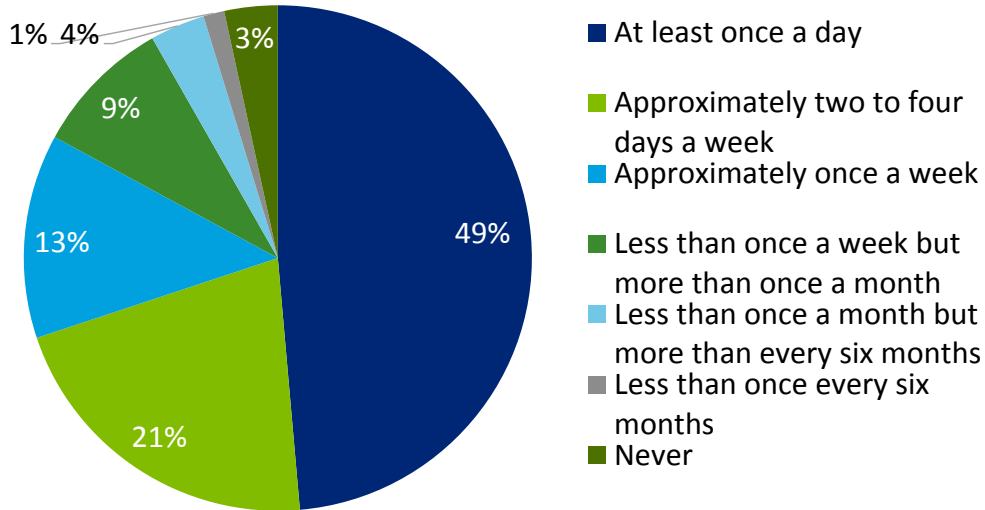


Source: Deloitte Access Economics ELLA Demand Survey

Eighty-three per cent of respondents reported using digital technology at least once a week, with 49% reporting digital technology is used daily at their service (Chart 2.15). Very few

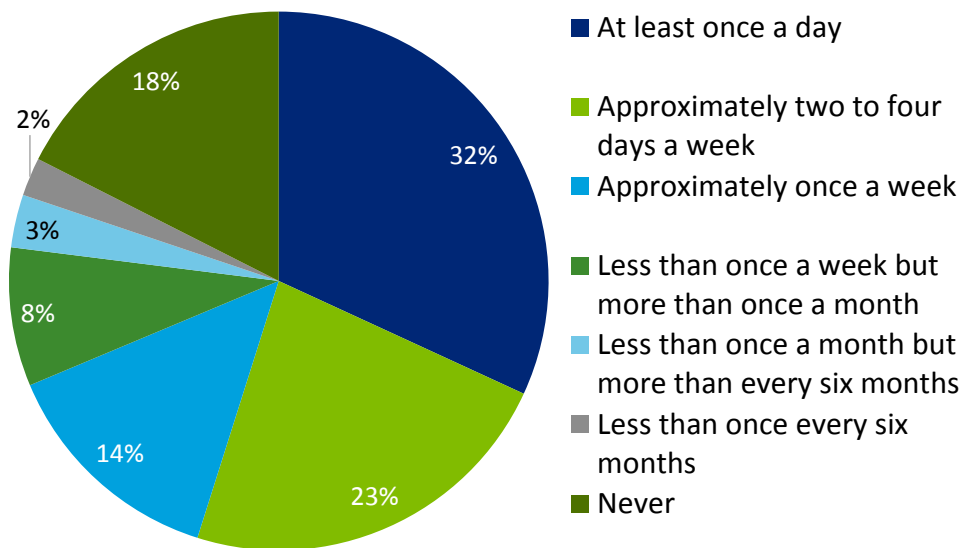
services (3%) reported that they never used digital technology in the classroom. Focussing specifically on tablet devices, nearly 70% of survey respondents used tablets on a weekly basis, with nearly one in three services reportedly using tablet devices every day (Chart 2.16).

Chart 2.15: How often do you use digital technology?



Source: Deloitte Access Economics ELLA Demand Survey

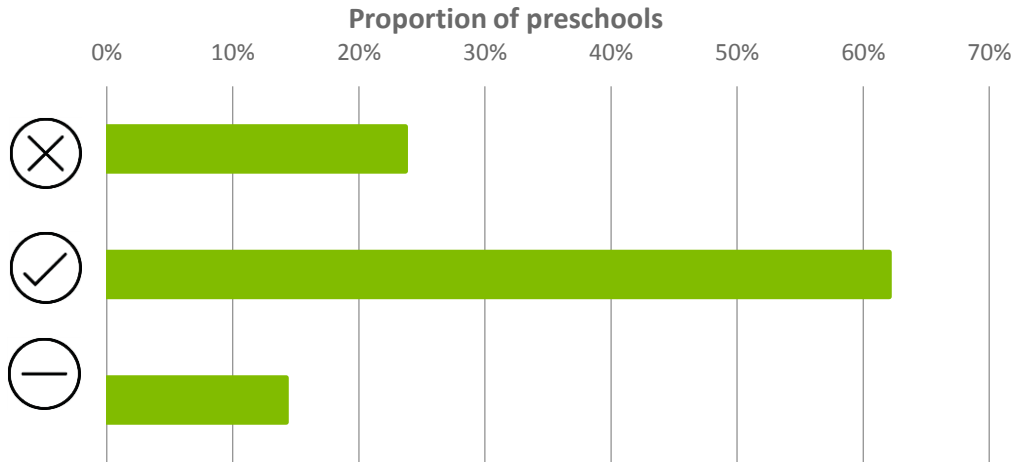
Chart 2.16: How often do you use tablet devices?



Source: Deloitte Access Economics ELLA Demand Survey

Further to this, Chart 2.17 indicates that more than 60% of services surveyed planned on increasing the usage of tablet devices at their service.

Chart 2.17: Do you plan on increasing the use of tablet devices at your preschool?



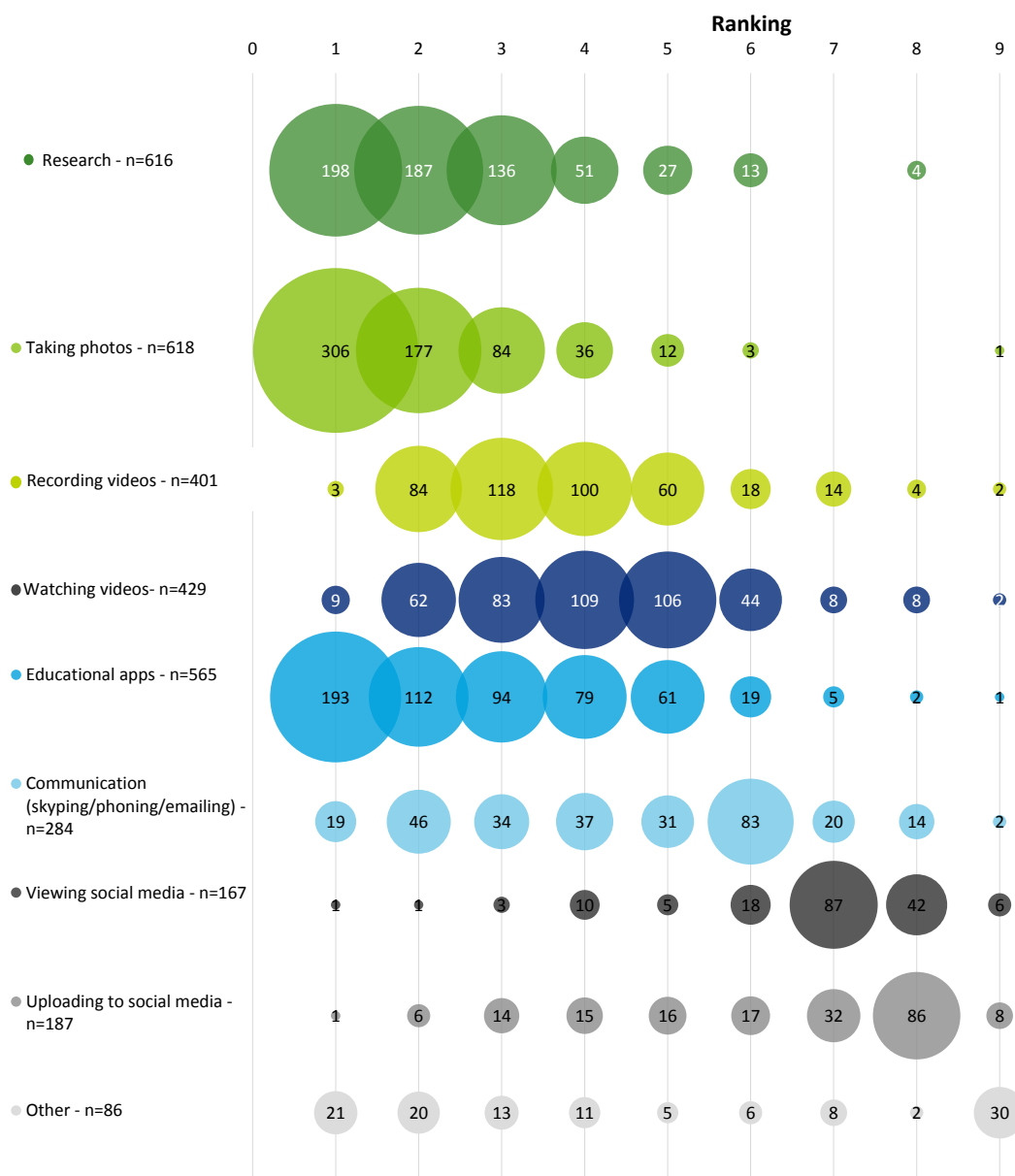
Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.18 illustrates the most common uses of tablets, with the size of each bubble reflecting how services ranked each use. The most common use received a ranking of *one*, the second most common use received a ranking of *two*, and so forth. For example, the chart shows that 616 services currently undertake research on their tablets – 198 of them rank this as the most common use of their tablets, 187 services ranked research as the *second* most common use, 136 services ranked research as the *third* most common use, and so on.

The chart demonstrates that 75% of respondents currently use educational apps in some form. However, only 26% stated that this is their *most common* use of tablets. Most services reported that taking photos (41%) or research (27%) were the most common use of tablets at their service. In other words, while educational apps are popular among respondents, preschools currently appear to have alternate preferred methods for using tablets in a preschool setting.

This was supported during consultations, where educators mentioned that children did not typically steer the use of tablets in the preschool; rather, the educator would use a tablet in a group session and guide the activity (such as researching a topic of interest on the internet).

Chart 2.18: Common uses of tablets, and how they were ranked¹

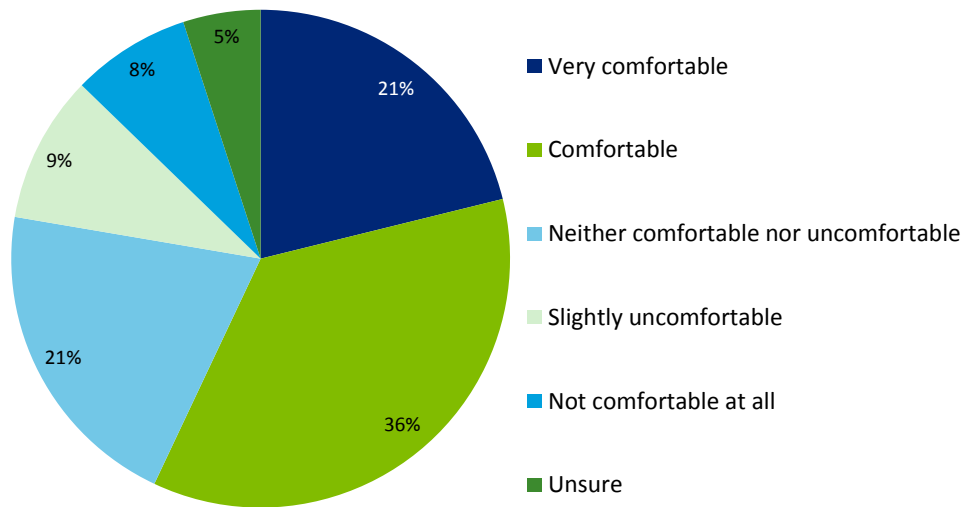


Source: Deloitte Access Economics ELLA Demand Survey

Note (1): The chart shows where respondents ranked each use. For example, the top line could be interpreted as: 198 preschools responded that research was the most common use of tablets, 187 preschools responded that research was the second most common use and 136 services responded undertaking research was their third most common use of tablets.

Consistent with the high rate of use of digital technology across the sector, a majority of survey respondents (57%) reported educators were either very comfortable or comfortable with applying digital technology in the classroom (Chart 2.19). However, perhaps unsurprisingly given digital technology is still a relatively new tool for the classroom, 21% of respondents felt educators were ‘neither comfortable nor uncomfortable’, with a further 17% reporting their educators were ‘slightly uncomfortable’ or ‘not comfortable at all’.

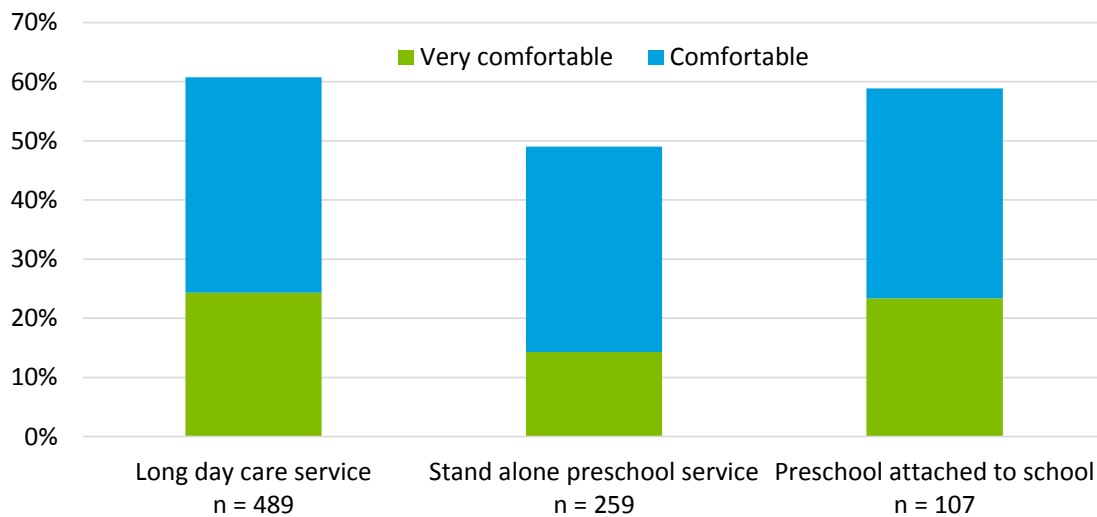
Chart 2.19: How comfortable are educators with using tablets in a learning environment?



Source: Deloitte Access Economics ELLA Demand Survey

Educator comfort with tablet technology as a teaching tool varies marginally between service types. Sixty per cent of survey respondents from LDC services and preschools attached to schools reported being comfortable or very comfortable with tablet use; whereas only 50% of respondents from stand-alone services reported such a level of comfort with tablet use.

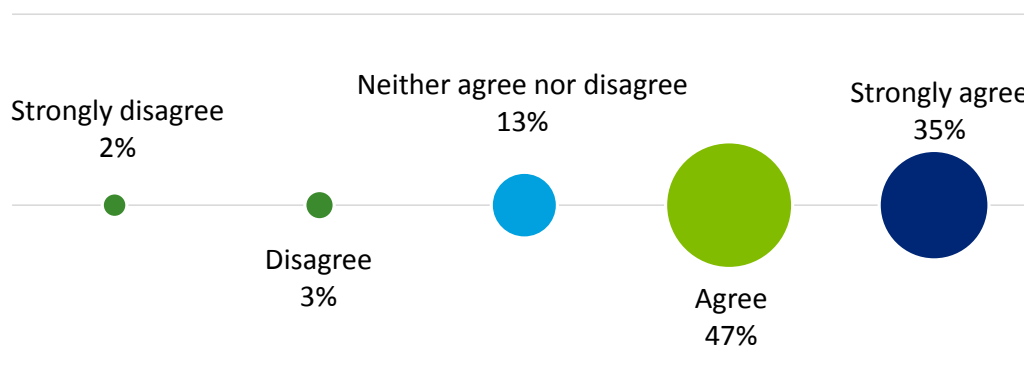
Chart 2.20: How comfortable are educators with using tablets in a learning environment, by service type?



Source: Deloitte Access Economics ELLA Demand Survey

Educator attitude towards digital technology

A large portion of survey respondents reported that tablets can be an effective educational tool in a preschool setting. Chart 2.21 shows more than 83% of respondents either ‘agreed’ or ‘strongly agreed’ that tablets can be an effective educational tool, while only 5% disagreed. This attitude was consistent across the sector, and did not vary by locations or preschool service type.

Chart 2.21: Can tablets be an effective educational tool?

Source: Deloitte Access Economics ELLA Demand Survey

There were numerous reasons given as to why the effectiveness of tablets as an educational tool will vary. Most respondents agreed that digital technology was a supporting educational tool, and *could* be effective if implemented competently, but could also be ineffective if not used appropriately. Educators who disagreed that tablets could be effective largely stated that hands-on learning, within a socially interactive classroom, was more appropriate for the early years of education than using digital technology. Among these providers, there was a general perception that digital technology did not stimulate engagement with the physical world or encourage social interactions, which are fundamental pillars of early years learning.

Educators also voiced concerns with the length of screen time young children are exposed to. This concern was reiterated in consultations where nearly *all* services mentioned screen time was a key consideration for educators. However, rather than prevent the use of technology, most educators were careful to monitor use and moderate children's exposure to digital technology.¹²

Conversely, educators who responded that tablets could be an effective tool emphasised the value of technology in modern life. They noted that tablets were engaging, and maintained a child's attention, which is key to learning. Educators also liked that tablets were interactive, which encouraged children to inquire, explore and learn.

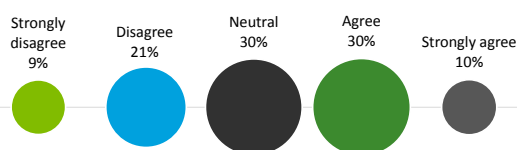
The survey also tested educators' perceptions towards several key aspects of tablet devices. Chart 2.22 indicates survey respondents remain largely divided as to whether or not tablets can encourage social interaction; and Chart 2.23 shows respondents do not consider tablets being damaged to be a significant risk within an early childhood learning environment. Chart 2.24 shows just under a quarter of respondents (25%) believe preschools should be free of

¹² The Australian Department of Health (2014), recommends that children younger than two years old should not be exposed to any screen time, and exposure to screen time for three to five years olds should be limited to no more than one hour per day. This is articulated in the Move and Play Every Day national physical activity recommendations for children 0-5 years, which were developed following a systematic literature review. Click [here](#) for further information.

digital technology.¹³ The latter is a relatively significant proportion given how prevalent tablets appear to already be within the respondent services.

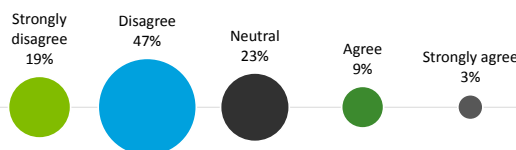
Drawing these findings together – as can be seen in Chart 2.25 – 45% of survey respondents feel investing in digital technology is a priority for their preschool. A large share of respondents (33%) remained neutral, with only 22% disagreeing that investment in digital technology should be a priority.

Chart 2.22: Using tablets with educational apps in preschools can boost social interaction



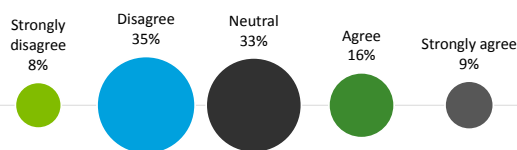
Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.23: Tablets can be easily damaged and are not appropriate in a preschool setting



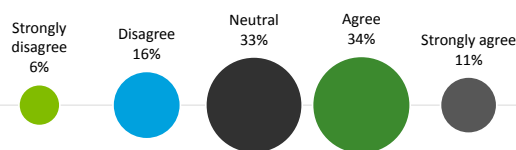
Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.24: Preschool should be free of digital technology



Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.25: Investing in digital technology is a priority for our preschool

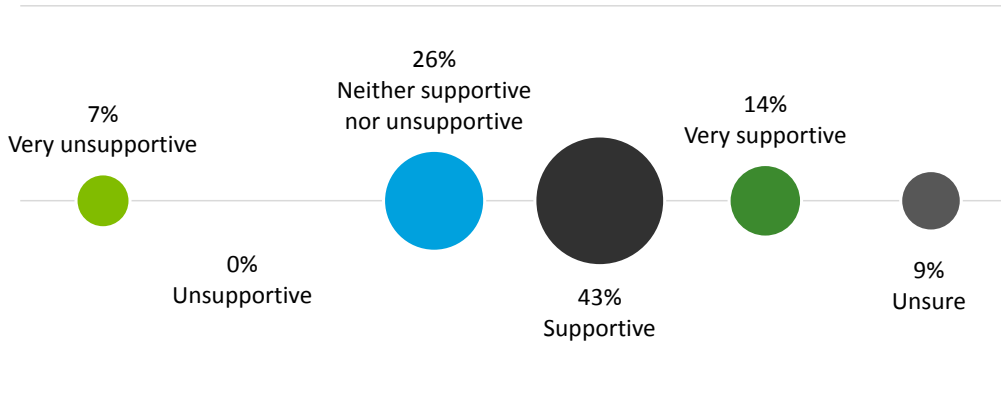


Source: Deloitte Access Economics ELLA Demand Survey

Preschools were also asked to gauge parental support of digital technology. A large share of respondents (43%) felt parents would be supportive of increasing the use of digital technology, while a relatively significant share of preschools (26%) felt parents were ambivalent towards the subject.

¹³ It should be noted that a large number of services that responded that preschools should be free of digital technology also reported using digital technology at least once a week or more often, and observed that tablets can be an effective learning tool. As these answers appear incongruous, it is possible some services misunderstood this question, and the results should be considered with caution.

Chart 2.26: How supportive are parents of increased use of tablet devices?



Source: Deloitte Access Economics ELLA Demand Survey

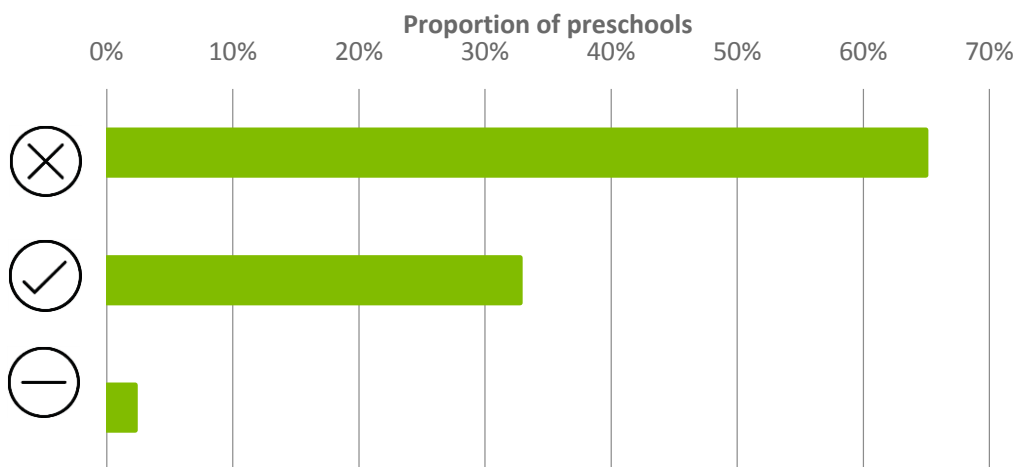
2.4 Capability and perception of language and cultural learning

Ultimately, the core objective of the ELLA program is to expose preschool children to a language other than English. The extent to which other, similar language programs are currently available in the preschool setting may give insight into preschools’ experience with language related play and learning. This section explores services’ capabilities and attitudes towards language learning in early childhood education. It also explores capabilities and attitudes towards cultural learning.

Language learning

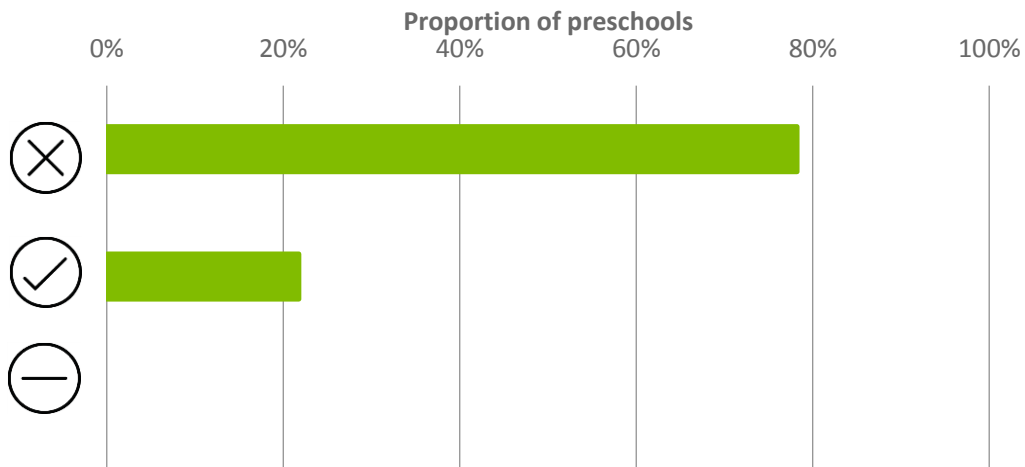
Chart 2.27 shows that more than 60% of services that responded to the survey do not currently offer a program to teach children a language other than English. Of these services, nearly 80% have never offered a program involving language learning (Chart 2.28).

Chart 2.27: Does your service offer languages other than English as part of your program?



Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.28: Has your service offered languages other than English as part of your program in the past?

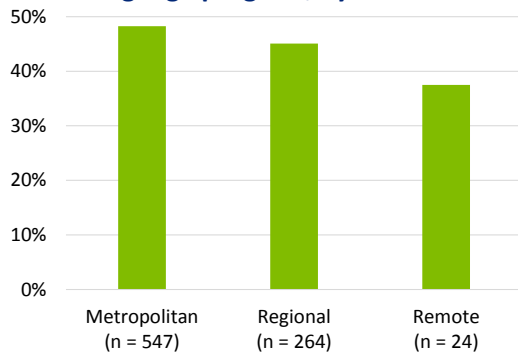


Source: Deloitte Access Economics ELLA Demand Survey

Among those preschools that offer a language program as part of their curriculum, there is significant diversity as to how language is introduced into the service. Many services reported introducing languages other than English to children through the use of songs and stories, while it is also common to have formal weekly lessons with a specialist language teacher. Some educators also stated that they rely on their multilingual families to help introduce new languages into the service.

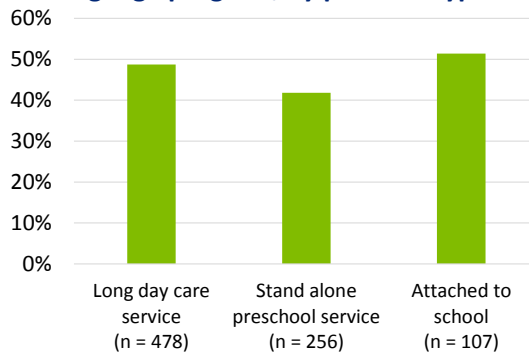
Chart 2.29 shows the share of respondents by location that have offered a program, including languages other than English at their service. Just under 50% of metropolitan and regional services currently offer, or have offered in the past, a language program, while just under 40% of remote services have offered such a program.¹⁴ By provider type, LDC services and preschools attached to schools were reportedly marginally more likely to have offered a language learning program than stand-alone services (Chart 2.30).

Chart 2.29: Services that have offered a language program, by location



Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.30: Services that have offered a language program, by provider type

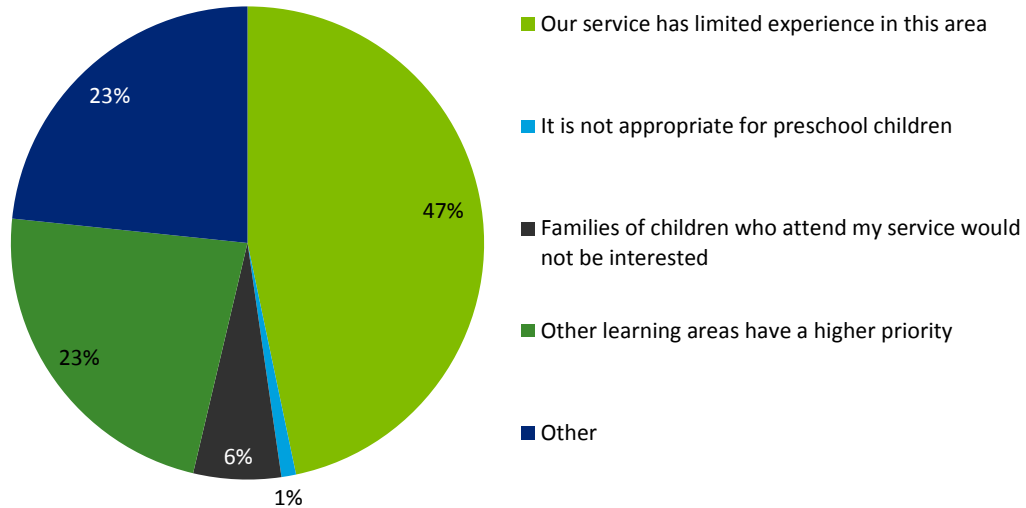


Source: Deloitte Access Economics ELLA Demand Survey

¹⁴ It should be noted that given the small number of remote services that responded to the question (24), this result should be treated with caution.

There were various reasons given for services not offering a language learning program at their service. Nearly half of all respondents cited a lack of experience in the area of languages teaching as a reason not to offer a language program, while 23% stated that other learning areas have a higher priority (Chart 2.31). A desire to focus on learning English (especially for children from a non-English speaking background), and difficulty in finding speciality staff were other common reasons given for not offering a language learning program.

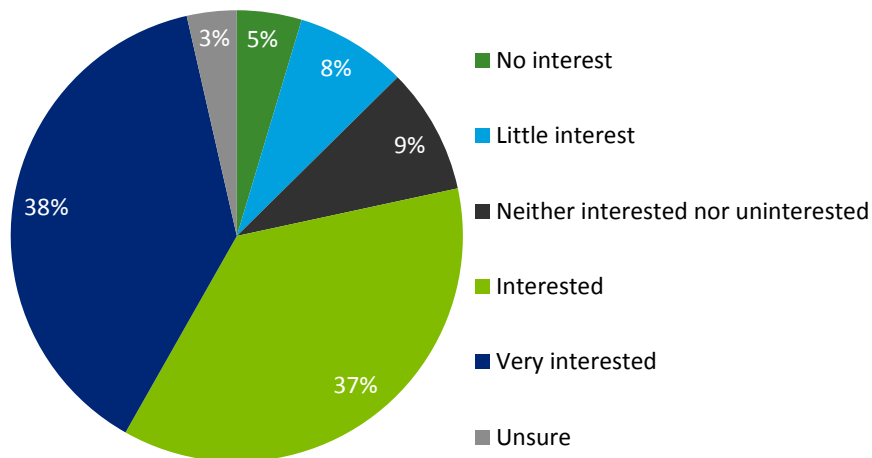
Chart 2.31: Why has your service not offered a language program in the past?



Source: Deloitte Access Economics ELLA Demand Survey

Although language learning is not currently overly common among survey respondents, most preschools responded that they were *very interested* or *interested* in introducing a language program in the next 12 months (Chart 2.32).

Chart 2.32: How interested is your service in introducing a language program in the next 12 months?

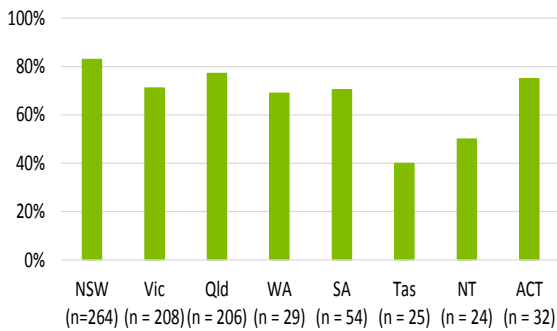


Source: Deloitte Access Economics ELLA Demand Survey

Dividing the responses by location of the service reveals some interesting findings. First, Chart 2.33 shows that services in Tasmania and the NT were less likely than those in other states to be interested or very interested in introducing a language program.¹⁵ Second, Chart 2.34 shows that services in remote areas were less likely than services in regional or metropolitan areas to be interested in introducing a language program.¹⁶

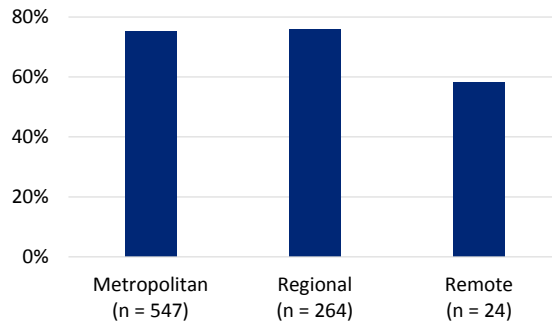
Finally, Chart 2.35 shows that from the pool of survey respondents, services in LDC settings were more likely than other service types to report being interested in a language program.

Chart 2.33: Services interested in introducing a language program, by state



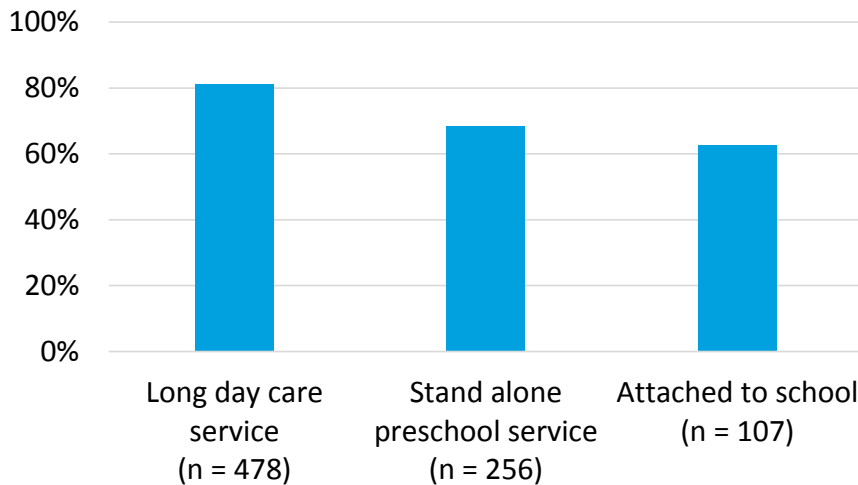
Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.34: Services interested in introducing a language program, by location



Source: Deloitte Access Economics ELLA Demand Survey

Chart 2.35: Services interested in introducing a language program, by provider type



Source: Deloitte Access Economics ELLA Demand Survey

In expressing an interest in a language program, preschools that responded to the survey largely stated they felt this was a natural extension of teaching children about cultural diversity. Educators also stated that children were most adept at learning new things at a young age.

¹⁵ The small number of services from Tasmania (25) and the NT (24) that responded to this question means this result should be treated with caution when inferring what this result means for national availability of the ELLA program.

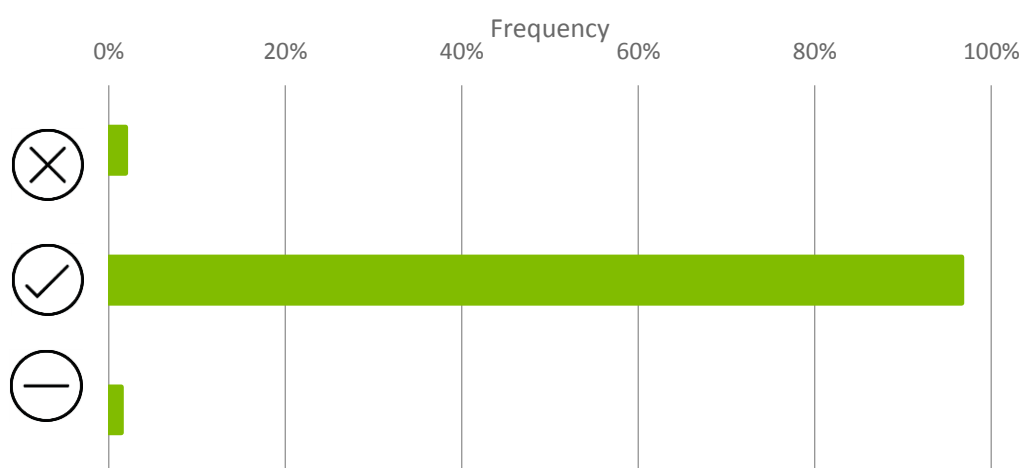
¹⁶ The small number of rural services that responded to this question (24) means this result should be treated with caution when inferring what this result means for a national implementation of the ELLA program.

Those services who did not express an interest in a language learning program were largely concerned that their children needed to focus on learning English – particularly those from a non-English speaking background. Other educators expressed concerns that fitting language learning into the curriculum was unrealistic given other expectations, or that they lacked the confidence and experience to offer a language learning program. These concerns were reiterated during consultation interviews.

Cultural education

Nearly all services responding to the survey reported including some form of cultural education in their preschool program (Chart 2.36). It should be noted that Outcome 2 of the Australian Government’s Early Years Learning Framework (EYLF) requires that children ‘respond to diversity with respect,’ which may explain the widespread inclusion of cultural education within respondent preschools.

Chart 2.36: Does your service include learning about other cultures?



Source: Deloitte Access Economics ELLA Demand Survey

2.5 Implications for the ELLA program

This section is intended to draw together the key findings from the survey analysis, and discuss the implications for the ELLA program. It is important to note that these implications are developed through analysis of the survey responses to questions attempting to determine the *current* capabilities and attitudes of preschools. A *forward looking* analysis, including a projection of the demand for the ELLA program, is discussed in Section 3.

Implications from Section 2.1 – internet connectivity

- The survey findings suggest there is a high level of internet connectivity and WiFi uptake among services that responded to the survey (noting this is likely to be overstated relative to the sector as whole, given the survey was largely undertaken online).
 - Further, connectivity did not vary by location, with internet equally prevalent in regional and remote regions as it was in metropolitan areas.

- Services consulted over the phone also noted the growing presence of the NBN in regional areas improved the accessibility of the internet.
- These findings suggest internet connectivity may not hinder the implementation of the program in regional or remote services.
- There may need to be consideration as to how the ELLA program can best be implemented at services with weak or inconsistent internet connections.
 - It is worth noting that the ELLA apps are played in an *offline* state (in other words, while not connected to the internet), so the importance of internet connectivity is reduced once the apps have been downloaded.¹⁷

Implications from Section 2.2 – hardware capacity

- Among survey respondents, tablets were reported as the preferred choice of digital technology as a teaching tool for children.
- Survey respondents were highly likely to use tablets at their service. To the extent this result can be extrapolated to the entire preschool sector, it may be possible to infer a significant proportion of the sector is sufficiently well equipped to offer the ELLA program.
- However, despite the prevalence of tablets, there is still likely to be a spectrum of readiness among services in regard to their capacity to deliver the ELLA program.
 - For example, it could be anticipated that some of the services currently without tablets may be unwilling, or unable, to meet the costs of purchasing tablets to offer the ELLA program in the short run.
 - Given tablets are typically obtained at the expense of the centre, there are also financial capacity implications for the ELLA program. However, the availability of support payments in disadvantaged areas should assist in alleviating this potential barrier to some extent.
 - Further, a portion of the respondents that own tablets but do not allow children to use them may require additional professional development to successfully introduce tablets as a learning tool into their preschool.

Implications from Section 2.3 – capability and perception of digital technology

- Survey results suggested digital technology use across respondents was both widespread and frequent.
 - Overall, the findings suggest that it is unlikely that a lack of familiarity with digital devices will inhibit the successful implementation of the ELLA program if those that responded are reasonably representative of the sector.
- The prevalence of use has reportedly built the skills and confidence of educators in the sample, but some educators reportedly lack confidence with digital technology.
 - To the extent that this result can be applied to the sector, a lack of educator experience and confidence with digital technology as learning tools may present a barrier for uptake among some services.

¹⁷ It should also be noted that internet connectivity is required to upload app usage data to the ELLA data storage server to monitor app usage. However, this does not affect the ability of children to use the apps.

- However, investing further in digital technology is not always a priority for survey respondents. This suggests there could be a natural initial ceiling level of interest and demand for ELLA. This could alter over time if preschools eventually become more accustomed to the idea of such technology being used in early childhood education.
- Most preschools noted the risks associated with screen time for young children, but many services felt they were capable of monitoring and moderating children's exposure to screens.

Implications from Section 2.4 – capability and perception of language and cultural learning

- Most respondents were interested in offering a language program, although currently, very few services that responded to the survey deliver a language program as part of their curriculum.
- Part of the reason services did not offer a language program is due to a lack of experience and confidence in teaching young children a language other than English.
 - In not requiring teachers to be specialist language teachers, or proficient in another language, the design of the ELLA program may act as an enabler for language learning by overcoming this particular barrier for some educators.
- Cultural education was widespread among respondents, but the ELLA program can further support these cultural learnings.

3 Demand for the ELLA program

This section provides an overview of the demand modelling undertaken to determine the likely uptake of the ELLA program when it becomes nationally available in 2017. Drawing on the survey responses, it estimates the expected take-up of the ELLA program (across the sector as a whole, and by service type and service location), and considers likely drivers of demand.

3.1 Expected take-up of the ELLA program

This section provides an overview of the method adopted to estimate the take-up for the ELLA program, and the results from the demand modelling. Results are first presented as for the preschool sector as a whole, and are subsequently presented by specific preschool characteristics – by state and territory, by service type and by location.

3.1.1 Estimation method

A number of assumptions have been made in order to analyse the information contained within the demand survey. Modifying these assumptions allows three scenarios to be estimated, representing a middle, upper, and lower bound for the number of services to take up the ELLA program.

The demand modelling was undertaken by drawing on selected questions from the demand survey; particularly those questions which pertained specifically to the uptake of the ELLA program. Consideration was given to responses to a number of key questions, and their relationship with ancillary questions regarding the actual implementation of the ELLA program in services.

The use of survey responses to inform expected demand introduces a number of uncertainties between stated and actual preference. The responses to a set of additional questions are therefore used to inform scenarios that might reflect different types of uncertainty in the approach. This section discusses how survey responses were used to estimate the expected take-up of ELLA, as well as the characterisation of uncertainty under different assumptions.

The most straightforward estimate of potential demand for the ELLA program is calculated based on responses to a key question in the demand survey. Responding services were asked a question on their likely uptake following a brief description of the Government's intentions with the ELLA program:

Over the next two years, the Australian Government will provide \$5.9 million to expand the ELLA program to all preschool services nationally from the 2017 school year.

The expansion will provide more preschool children, including those in regional and remote areas, with the opportunity to study a language other than English on an opt-in basis through play-based learning using mobile devices.

There are currently five languages available through the ELLA program, with seven play-based apps for each language – Arabic, Indonesian, Chinese (Mandarin), Japanese and French.

Following this description, respondents were asked:

Based on what you currently know about ELLA, if it were available now, would you start using it in your service?

Possible responses to this question were:

- Definitely yes
- Probably
- Unsure
- Probably not
- Definitely not

In order to use information contained in these responses to estimate the potential demand for ELLA, each response was mapped to an actual probability that the responding service will implement the ELLA program at some point in the future. Table 3.1 below presents the mapping of an individual response to the probability of service uptake (note that this mapping was not made explicit to respondents in the survey).

Table 3.1: Assumed mapping of demand survey response to ELLA uptake

Response	Assumed probability of uptake
Definitely yes	100%
Probably	75%
Unsure	50%
Probably not	25%
Definitely not	0%

Aggregating the individual likelihood of participation does, however, inform the **proportion of services** that are expected to engage with the ELLA program at some point in the future.

Although responses to this question provide an estimate of the ‘stock’ of demand for ELLA, they provide no indication of the rate at which services intend to engage with the ELLA program over time. Estimates of the uptake rate for the ELLA program over time were informed based on responses to the following question:

As a final reflection, please indicate whether you intend to participate in the ELLA program.

This question had potential responses of:

- Next year (in 2017)
- In the next two years (before 2019)
- In the next three years (before 2020)

- In more than three years' time (during or after 2020)
- Never/Not sure

A combination of responses to the uptake question and intended year of participation is used to derive the expected take-up rate for the ELLA program in each year to 2020.

Demand scenarios

To account for inherent uncertainty in the analysis, three scenarios have been developed, representing an upper, an adjusted upper, and lower bound, depending on how the survey results are interpreted.

Upper bound scenario

- A common problem in inferring demand from stated preferences (for example, through a survey) is that individuals are unlikely to fully account for the costs involved in engaging in such a program.
- This extends beyond direct costs resulting from a potential price for the app or providing tablet devices, noting that just 6.4% of responding services stated that they would be willing to pay for ELLA. Services bear additional costs through the time and effort involved in engaging with the ELLA program. This could include, as an example, additional effort involved in changing schedules to incorporate time for children to engage with the ELLA apps.
- As such, demand estimates based on the unadjusted responses to the question above is likely to represent an upper bound.

Adjusted upper bound scenario

- To arrive at a revised upper bound estimate of demand for the ELLA program, responses were adjusted to account for potential bias arising from a lack of consideration for the full range of costs for services.
- Individual responses were adjusted downward based on whether or not they would be less likely to engage with the ELLA program if services are required to supply their own tablet devices, and whether they would be less likely if services were responsible for installing the ELLA apps and managing security settings.
- This method was designed to (at least partly) account for the bias associated with survey respondents failing to fully account for the costs involved in the ELLA program. However, it does not account for non-response bias, and (as discussed above) services that did not respond to the survey are expected to be less likely to participate in the program, compared to services that responded to the survey. For these reasons, this scenario is considered to represent a revised upper bound for uptake of the ELLA program, in that the true uptake will most likely lie below this estimate.

Lower bound scenario

- A further potential issue with the survey is bias arising from systematic patterns of non-response. Non-response bias arises if, for example, services that choose not to respond to the demand survey are systematically less likely to want to engage with the ELLA program once it is made nationally available.
- In order to incorporate the potential effect of non-response bias on the estimated uptake of ELLA, a lower bound scenario was developed that assumes all services who did

not respond to the demand survey will not engage with the ELLA program going forward. This is, however, likely to be a very conservative assumption.

- To the extent these preschools have similar attitudes and capabilities towards digital technology and language learning, the final uptake of the ELLA program may be closer to the adjusted upper bound scenario. To the extent that these services did not respond to the survey due to their unwillingness to participate in the program, the true uptake of the program may lie closer to the lower bound.

3.1.2 Modelling results

Ultimately, the purpose of the project was to estimate the likely take-up of the program, to ensure that an appropriate resource model was in place, and that the Department could respond appropriately to the level of interest from the preschool sector. With this in mind, the modelling was undertaken with consideration towards three separate cases, across which the resourcing requirement for the Department is expected to differ. These cases included:

- The estimated total *cumulative* participation in the ELLA program. This figure will reflect all sites that have ever participated in the ELLA program.
- The estimated *ongoing* participation. The ongoing participation rate reflects that some services will sign-up to commence the ELLA program, but will withdraw from the program.
- The estimated *active* participation, which reflects the withdrawal rate (as above), but also accounts for those services that disengage with the program (by going extended periods without using the apps).

Within each of these cases, an upper bound, an adjusted upper bound and a lower bound scenario have been estimated.

Each of these three cases is explained in further detail below. Of these cases, the second case (the estimated ongoing participation, after controlling for the withdrawal rate), is the most relevant given the purpose of the modelling was to estimate demand for ELLA among services that may require resourcing or support. Even a disengaged service would be expected to require some resource allocation, to encourage their re-engagement.

Estimated total cumulative participation in the ELLA program

The following section presents the three scenarios for the first case described above.

Table 3.2 shows that unadjusted responses to the demand survey suggest that just below 76% of services are expected to take up the ELLA program at some point in the future (this figure does not account for attrition, which is considered further below).¹⁸ As discussed in the previous section, this figure is likely to represent an upper bound of demand.

¹⁸ This result does not change substantially when responses are weighted to account for survey representativeness. Due to the smaller sample size of weighted estimates resulting from only a partial match between administrative data and survey responses, further presentation of results will not be weighted.

Table 3.2: Expected demand for ELLA

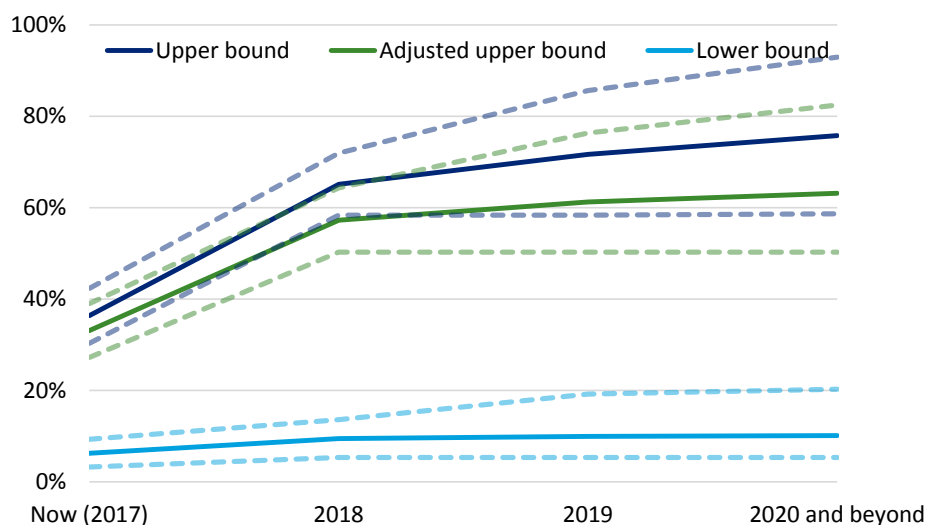
Possible response	Share of respondents	Weighted share
Definitely yes	41.1%	40.2%
Probably	30.6%	31.8%
Unsure	20.4%	19.5%
Probably not	6.4%	6.9%
Definitely not	1.6%	1.6%
Implied uptake rate (upper bound)	75.8%	75.5%
Sample size	828	543

Source: Deloitte Access Economics analysis of ELLA demand survey

The adjusted upper bound estimate indicates that approximately 63% of services are estimated to be using the ELLA apps by 2020, and beyond, while the lower bound estimates the final uptake of the program to be just more than 10% of services. The final estimate of demand for the ELLA program (and whether it lies closer to the adjusted upper bound or the lower bound) is dependent on the assumption surrounding those services that did not respond to the survey.

The results presented to this point outline to the *final* demand for the ELLA program – that is, participation in the program by 2020 and beyond. However, it is likely that there will be substantial variation in the number of services willing to engage with the ELLA program over time. Analysis illustrated in Chart 3.1 traces the expected rate of uptake from now to 2020 and beyond. The results suggest that in the first year of ELLA being nationally available (2017), the take-up could reasonably be expected to be between 6% of services (the lower bound estimate) and 33% (the adjusted upper bound).¹⁹ In the second year, the take-up can be expected to increase to between 9% and 57% of services. This suggests that demand is likely to be concentrated in 2017 and 2018, with a proportion of services adopting a ‘wait and see’ approach.

¹⁹ To date (as at 22 December 2016) the Department has reported a high level of interest from the preschool sector in participating in ELLA in 2017

Chart 3.1: Proportion of services ever engaging with the ELLA program

Source: Deloitte Access Economics analysis of ELLA demand survey

Note – the dotted lined represent the 95% confidence interval surrounding each estimate.

Estimated ongoing participation in the ELLA program

It is important to note that the estimates illustrated in Chart 3.1 represents the cumulative number of services expected to participate in the ELLA program. This is likely to be somewhat different than the number of services that take-up, and *continue to use* the ELLA apps, as some services are expected to withdraw from using the program, as discussed further below.

In order to estimate the number of services that will be *ongoing* ELLA users, a withdrawal rate is applied to the uptake numbers. The withdrawal rate of ELLA trial sites from the 2016 ELLA trial has been used as a guide, to indicate the potential rate of withdrawal as the ELLA program becomes nationally available.²⁰

While the withdrawal rate from 2016 was considered to provide the best estimate for the rate of attrition among services stating an interest in participating in the ELLA program, some caution is required when applying these rates.

- First, the ELLA program transitioned from a model in which the ELLA trial sites were provided with digital devices, to a Bring Your Own Device (BYOD) model in 2016. The different methods of program delivery may result in a different withdrawal rate in 2016, relative to what would be expected if services were more aware of their requirements to participate in the ELLA program.²¹
- Second, lessons learned from the transition phase experienced in the first half of 2016 when moving to the BYOD model will inform the provision of support to new services in 2017.

²⁰ For the purposes of the modelling, a site is assumed to have withdrawn from the ELLA trial if they have formally withdrawn from the trial by notifying Education Services Australia.

²¹ It is also noted that ELLA program requirements and guidelines were provided to all services who expressed an interest to participate in 2016, which outlined the model for the 2016 trial.

- Third, it is suggested that demand be actively managed to ensure uptake of the program aligns with the Department’s ability to provide the program to a sufficiently high standard.²²

The analysis of 2016 trial sites indicates several reasons why services might withdraw from the ELLA program:

- services may not understand the trial requirements (for example, in 2016, services did not fully understand the requirements involved in participating in the expanded trial, especially in relation to the introduction of the Bring Your Own Device (BYOD) model);
- they face unexpected complexities in implementing the program (such as difficulty obtaining the required tablet hardware or the timing of implementation);
- they signed up to the program without fully informing the educators who would be implementing ELLA about the program requirements; or
- they decided to withdraw from the program after starting due to staffing changes or if educators find the ELLA program does not fit with the rest of their learning program.

Services that had not started using the first app (released 28 February 2016) by July 2016 (when app five was released) were asked to withdraw from the 2016 ELLA program. This is consistent with the program intent, recognising that for the full benefits of the ELLA program to be realised, the program should be implemented over the course of the preschool year.

Advice from ESA indicates that in 2016, 64 services (out of a total of 349 services that indicated a willingness to participate in the ELLA trial) signed-up for the program, but either did not download the apps or decided to withdraw from the trial. Only seven of these 64 services actually commenced using the apps prior to withdrawal.²³ For the purposes of the modelling, 18% is taken to be the short-term withdrawal rate – the probability of a service commencing the ELLA program, but withdrawing from the trial before the end of the year.²⁴

Finally, the modelling also included a long-term withdrawal rate, which represents the probability that a service will participate in the program for a full year, but does not continue to participate in the program the following year. This was estimated by calculating the attrition rate of services between the 2015 and 2016 trial. One site out of 41 (2.5%) completed the program in 2015, but did not sign up for the program in 2016. A withdrawal rate of 2.5% was therefore used as the long-term withdrawal rate, for the purposes of the modelling.

Incorporating withdrawal rates into the modelling provides an estimate of the proportion of services estimated to continue to participate in the ELLA program by 2020 and beyond. As illustrated in Chart 3.2, under the upper bound, approximately 59% of services are expected to be using the ELLA at 2020 and beyond, while the adjusted upper bound estimate indicates that approximately 49% of services are estimated to be using the ELLA apps by 2020, and beyond. The lower bound estimates final uptake of the program to be 7%. As in the case above, the final estimate of demand for the ELLA program (and whether it lies closer to the adjusted

²² This is discussed further in Section 4 – Implementation considerations.

²³ Many of the sites that withdrew throughout the 2016 trial expressed an interest in participating in the ELLA program in the future.

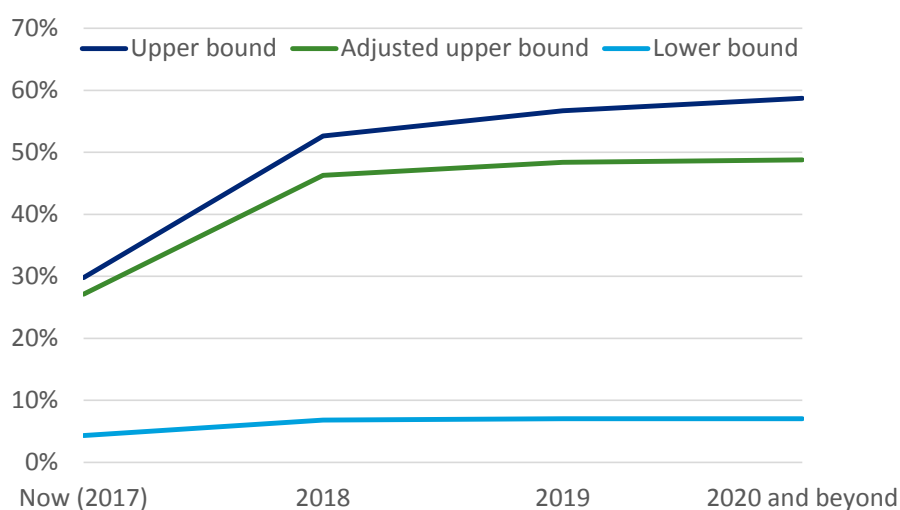
²⁴ It should be noted that as the ELLA apps become more recognised within the early childhood education sector, and information about the program becomes more widespread, withdrawal rates may decrease.

upper bound or the lower bound) is dependent on the assumption surrounding those services that did not respond to the survey.

The profile of participation over time is similar to that demonstrated under the cumulative demand for the ELLA program. The results suggest that in the first year of ELLA being nationally available (2017), the take-up could reasonably be expected to be between 4% of services (the lower bound estimate) and 27% (the adjusted upper bound).²⁵ In the second year, the take-up can be expected to increase to between 7% and 46% of services.

These results indicate that many services are interested in ELLA, but are likely to wait and see before determining whether to adopt the program. The experience the early adopting services have with the ELLA program is likely to be a more accurate guide to subsequent take-up than the responses to this survey, and may have ramifications for the rate of withdrawal.

Chart 3.2: Participation in ELLA over time, after accounting for service withdrawals



Source: Deloitte Access Economics analysis of ELLA demand survey

A final, important caveat to the analysis is the widely acknowledged difference between survey responses (or *reported* behaviour), and *actual* behaviour.²⁶ It is possible that respondents have been unrealistically optimistic in their desire and ability to introduce the ELLA program. While this has, to some degree, been controlled for through the introduction of the adjusted upper bound, and the application of the withdrawal rate, it may be the case that this analysis overestimated the demand for the ELLA program.

Services expected to *actively* participate with the ELLA apps

The above estimation of service withdrawal assists in determining the level of resourcing required to support the ELLA program following national expansion, as when a service withdraws, it no longer requires any resourcing effort. However, it is also plausible a service

²⁵ To date (as at 22 December 2016) the Department has reported a high level of interest from the preschool sector in participating in ELLA in 2017

²⁶ See, for example, Kahneman, D (2011); *Thinking Fast and Slow*, Farrar, Straus and Giroux.

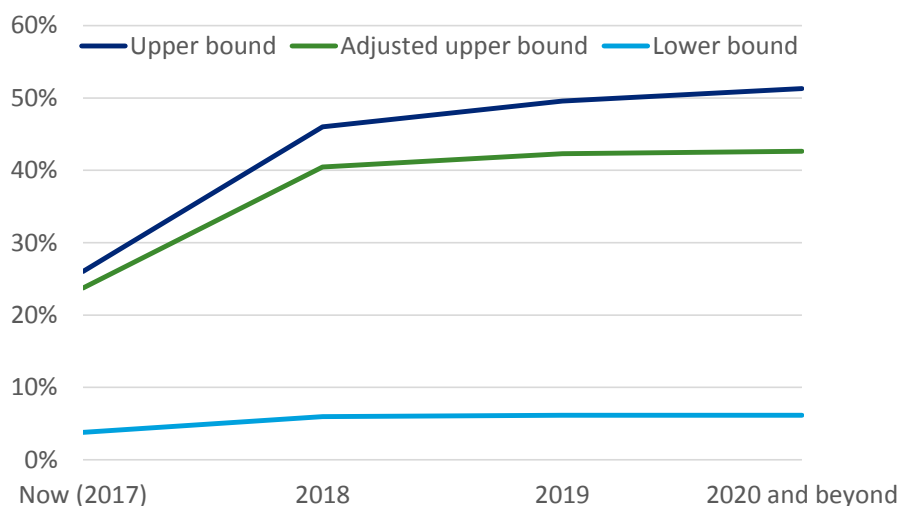
does not formally withdraw from the program, but disengages with the program by not using the ELLA apps. Depending on the approach the Department takes in managing the program, these services may not require any resourcing effort. Alternatively, in the event the Department attempts to help these services re-engage with the program, these services could still require support and attention from ESA. This section therefore considers a case that includes both a combined withdrawal *and disengagement* rate from the 2016 ELLA trial.

The evaluation of the 2016 ELLA trial revealed a small number of services did not formally withdraw from the trial, but were not actively using the apps either.²⁷ Analysis suggests that these services disengaged with the ELLA program due to staffing changes (with new staff being unfamiliar with the apps), or if educators find ELLA does not fit with the rest of their program. During the 2016 trial, 36 services (10%) were estimated to have stopped engaging with the ELLA apps, but had not formally withdrawn from the trial.

Moreover, as the withdrawal rate for one year is the only available reference point for the above assumption regarding withdrawal, consideration of disengagement may provide a further guide to the actual level of attrition that could be expected.

Chart 3.3 estimates participation in the ELLA program, if these disengaged sites were also considered to have withdrawn from the ELLA program. As expected, all estimates of ongoing participation with a combined withdrawal and disengagement rate are lower than the corresponding figures if only a simple withdrawal rate was applied.

Chart 3.3: Participation in ELLA over time, after accounting for service withdrawals and those disengaged with the program



Source: Deloitte Access Economics analysis of ELLA demand survey

Under the upper bound, approximately 51% of services are expected to be using the ELLA at 2020 and beyond, while the adjusted upper bound estimate indicates that approximately 43% of services are estimated to be using the ELLA apps by 2020, and beyond. The lower bound

²⁷ A service was considered to be not using the apps if every user at the service was inactive for six consecutive weeks prior to the conclusion of the trial (taken to be 20 November 2016 for the purpose of the analysis).

estimates final uptake of the program to be 6%. As in the previously articulated cases, the final estimate of demand for the ELLA program (and whether it lies closer to the adjusted upper bound or the lower bound) is dependent on the assumption surrounding those services that did not respond to the survey.

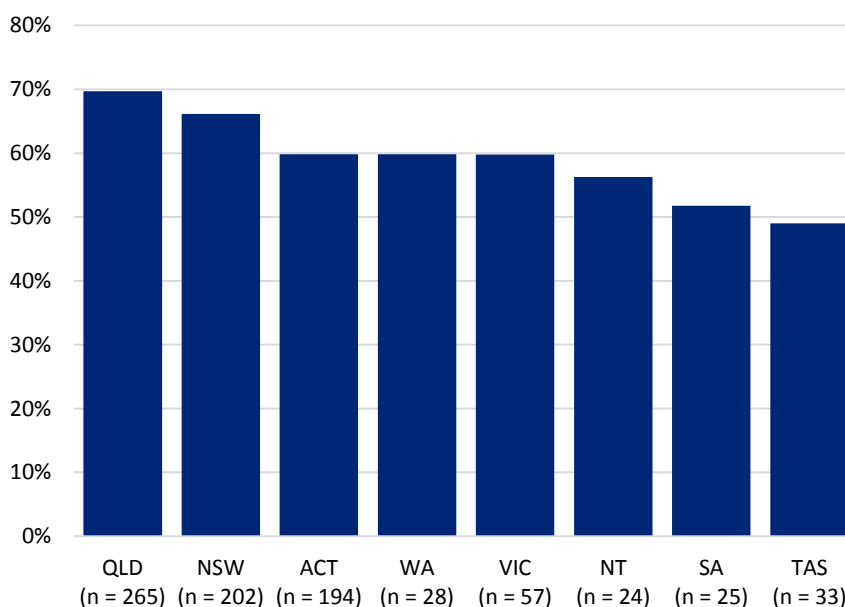
Finally, the results suggest that in the first year of ELLA being nationally available (2017), the take-up could reasonably be expected to be between 4% of services (the lower bound estimate) and 24% (the adjusted upper bound).²⁸ In the second year, the take-up can be expected to increase to between 6% and 40% of services. These results are consistent with earlier finding about the uptake of ELLA over time, indicating that while services are interested in ELLA, they are likely to wait and see before determining whether to adopt the program.

3.1.3 Stratified results

This section presents the expected uptake of the ELLA program across a number of key characteristics of preschools. The results illustrated below represent a stratification of the **adjusted upper bound** described in Section 3.1.1. Due to small sample sizes, in particular for smaller states and remote services, estimates within this section should be interpreted with caution.

Results stratified by state and territory are illustrated in Chart 3.4, and suggest substantial variation in expected uptake across Australia. Responses indicate that services in QLD and NSW have the greatest degree of interest in the ELLA program. Interest falls considerably for responding services in the NT, South Australia and Tasmania, noting the small sample sizes, particularly for the NT and Tasmania.

Chart 3.4: Expected ELLA uptake, by state and territory

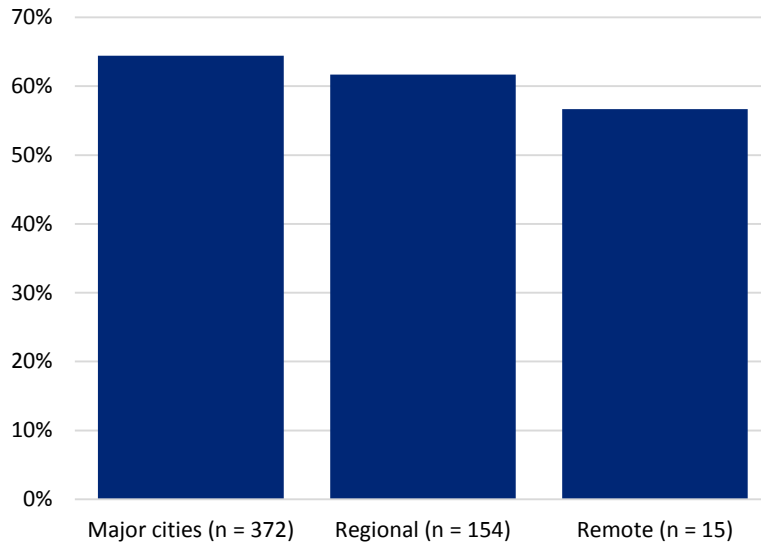


²⁸ To date (as at 22 December 2016) the Department has reported a high level of interest from the preschool sector in participating in ELLA in 2017

Source: Deloitte Access Economics analysis of ELLA demand survey

Stratifying the responses by remoteness (Chart 3.5) suggests that potential engagement with the ELLA program is likely to be lowest in regional and remote areas (small sample sizes, in particular for remote and very remote Australia, notwithstanding). This observation follows the results seen in Section 2.4, where it was highlighted that survey respondents in remote services were less interested in introducing a language learning program into their preschools.

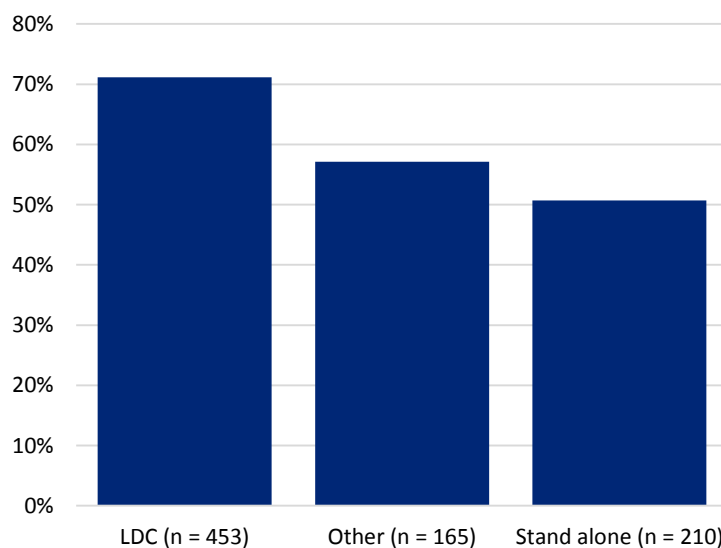
Chart 3.5: Expected ELLA uptake, by remoteness



Source: Deloitte Access Economics analysis of ELLA demand survey

As indicated in Chart 3.6, stand-alone preschool services were considerably less likely to respond positively on the demand survey. This is consistent with findings from the survey analysis, with stand-alone services reporting having, on average, less confidence with digital technology and being less interested in language learning programs. LDC services are expected to engage with the program at a rate 20 percentage points higher than stand-alone preschools.

Chart 3.6: Expected ELLA uptake, by service type



Source: Deloitte Access Economics analysis of ELLA demand survey

Overall, engagement with the ELLA program is likely to be greatest in metropolitan areas, in particular in NSW. Engagement tends to appear weaker in regional and remote Australia, although engagement was particularly strong for the four services responding from remote QLD. Responses to the survey also suggest that potential engagement rates with the ELLA program are likely to be higher for long day care services.

3.2 Demand drivers

Based on the broader response data provided by the demand survey, factors that are likely to influence uptake in to the ELLA program were analysed. This involved using regression analysis to uncover responses to demand survey questions that are statistically significantly associated with an increased probability of engagement with the ELLA program going forward. The following section presents results from this regression analysis.

As responses to the key survey question were discrete categories, an ordered probit model²⁹ was used to estimate the relationship between responses to the key demand question and other survey questions. Owing to the nature of such a model, the magnitude of each key demand driver cannot be interpreted directly. Instead, throughout the section below, effects are to be interpreted on a *relative* basis. In other words, the analysis focusses on the nature of the impact each factor has on uptake of the ELLA program (whether it estimated to increase or decrease the uptake of the ELLA apps) and the relative magnitude of this impact. The analysis cannot quantify the impact on uptake.

²⁹ An ordered probit model is a regression model where the dependent variable can fit into one of several discrete categories (in this case, the categories are 'definitely yes', 'probably', 'unsure', 'probably not' and 'definitely not'). The purpose of this model is to estimate the **probability** that any given preschool, based on their characteristics and their responses to survey questions, falls into one of these categories. Coefficient estimates (representing the impact each characteristic or attribute has on the final probability of uptake) are presented throughout this section, with a corresponding 95% confidence interval in light blue.

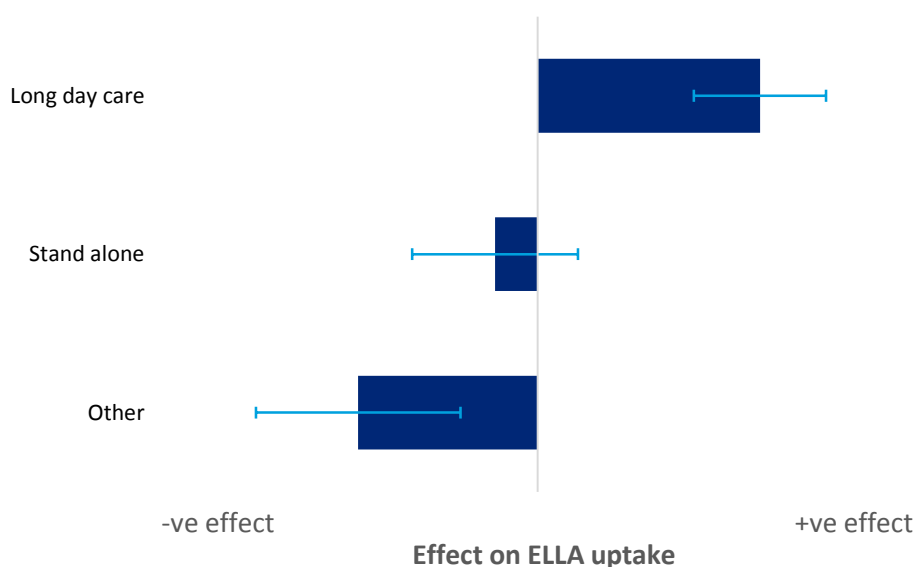
Finally, it is important to note that bias may arise from the presence of omitted factors that influence potential uptake. Additional factors that affect response to the demand question that are left out of this analysis, as the demand survey could not ask about every potential factor that could influence uptake, could bias the results presented below.

3.2.1 Modelling results

Results of the regression analysis suggest that services that reported **using apps on a daily basis** were more likely to indicate an interest in ELLA. Similarly, services that **currently include a language other than English** as part of the preschool program were considerably more likely to respond that they would be willing to start using ELLA apps in their service.

Across different service types, as illustrated in Chart 3.7 below, LDC services were more likely to respond with positive interest in ELLA. In contrast, government services tended to respond that they would be less likely to engage with the ELLA program.

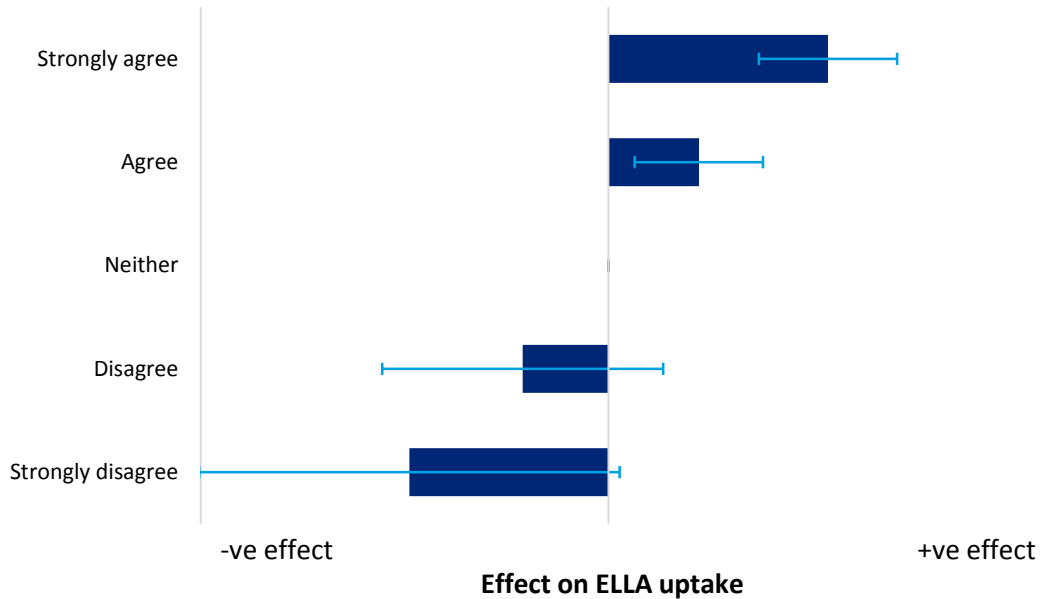
Chart 3.7: Effect on ELLA uptake, service type



Source: Deloitte Access Economics analysis of ELLA demand survey

The estimated effect of different responses to the statement that tablet devices can be effective tools for preschool children is illustrated in Chart 3.8 below. Services that tended to agree with the statement also responded that they would be interested in engaging with the ELLA program. Likewise, services that disagreed or strongly disagreed with the proposition that tablets can be effective educational tools also noted a lower likelihood of engaging with the ELLA program. However, this effect was not statistically significant, likely due to the relative small number of services that responded with either 'Disagree' or 'Strongly disagree' to this question (just more than 4% of responding services).

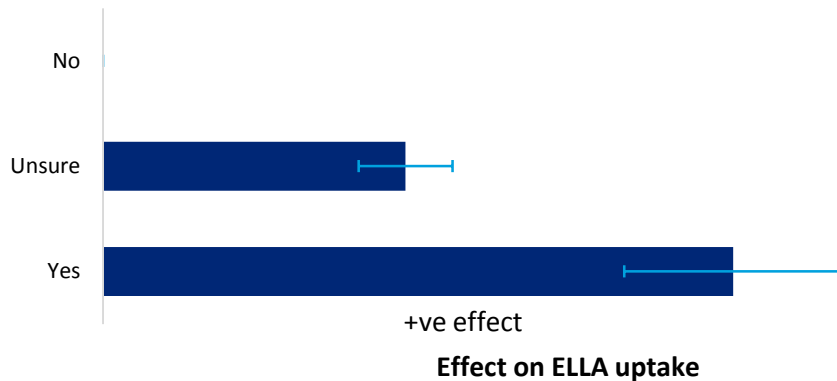
Chart 3.8: Effect on ELLA uptake, attitude towards tablet devices



Source: Deloitte Access Economics analysis of ELLA demand survey

Finally, Chart 3.9 illustrates that services that responded they were unsure about paying for the ELLA apps would be more likely to engage with the ELLA program than those services that would not be willing to pay. The few services that stated they were willing to pay (just more than 6% of responding services) expressed considerably greater interest in engaging with the program.

Chart 3.9: Effect on ELLA uptake, willingness to pay for apps



Source: Deloitte Access Economics analysis of ELLA demand survey

Results presented above suggest that the attitudes of services towards using educational apps and tablet technology in the preschool are important factors influencing potential uptake of the ELLA program going forward.

3.2.2 Survey analysis

To conclude the demand survey, services were asked to consider whether a range of factors were more or less likely for them to adopt the ELLA program. Through this question, it was

expected that some of the key enablers and barriers to uptake would be revealed. A summary of findings is shown in Chart 3.10.

Chart 3.10: Factors that may change the likelihood of uptake of the ELLA program



The factors most likely to increase adoption of the ELLA program included the ELLA apps being made available free of charge, knowing the ELLA apps were aligned with the EYLF and educators having control over the amount of exposure to screens. Eighty-eight percent of respondents felt these factors would make them more likely to adopt the ELLA program.

Other factors that would influence an increase in the likelihood of services adopting the ELLA program included:

- the availability of supports (either through a help desk, access to online support materials or the opportunity to participate in workshops or online seminars),
- the fact that educators did not need to be proficient in the target language and
- a previous evaluation of the program found that the apps are successful at exposing some children to the target language.

At the other end of the spectrum, 35% of services responded that providing their own tablets would make them less likely to adopt the ELLA program, while 20% of services responded that being responsible for installing the apps and securing the tablets reduced the likelihood of them adopting the program.

3.2.3 Implications for the ELLA program

The demand drivers identified in this section were largely consistent with prior expectations.

The modelling shows that the services perception towards either digital technology or language learning plays a large role in the probability of taking up the ELLA program. Unsurprisingly, those preschools with a positive attitude towards language learning, or a belief that tablet devices are effective educational tools, are reportedly more likely to adopt the ELLA program.

On the other hand, any cost associated with the program is estimated to be a significant barrier to demand. Services willing to pay for the program (pay can be broadly interpreted to include purchasing of equipment) were estimated to be more likely to introduce the program into their preschools. This was supported through simple analysis of the survey results (to the extent the survey is representative of the preschool sector), where the findings indicate that costs are likely to be a barrier to participation in the ELLA program for a number of preschools. The fact that respondents noted the acquisition of iPads was largely at the expense of the service may indicate that funding support for the *indirect* costs associated with the program (in other words, not the cost of purchasing the apps, but the cost of purchasing resources to deliver and support the program) may be a valuable measure in reducing barriers to participation.

The survey analysis also suggests respondents that appreciate the ELLA program may overcome some of their stated concerns with adopting a language learning program. In particular, the program allows educators to not be proficient in the target language, and development opportunities may be available to enhance educator capabilities in this space.

Finally, there appears to still be a small (but not insignificant) number of respondents expressing discomfort with digital technology. Assuming this finding translates across the broader sector (noting caution should be observed in inferring results from the survey for the sector) it may be prudent to consider IT support measures, in addition to language support measures, in a nationally available program.

4 Implementation considerations

The modelling results and survey analysis reveal that services hold differing views, and have varying levels of competence and confidence, with digital technology and language learning in a preschool setting.

Notwithstanding the limitations with extrapolating these results to the entire early childhood sector, the analysis reveals certain considerations for the planned expansion of the ELLA program. The factors to consider, along with a suggested path forward (where appropriate), is discussed below. The key areas for discussion in this section draws on findings from the demand modelling, the demand survey analysis and the evaluation of the 2016 ELLA trial (presented to the Department in an alternate report).

Guidance and service support

There are several areas where the Department may consider guidance and support appropriate for services. The precise nature of the guidance (for example, making information available online or offering face-to-face support) will also need to be determined.

First, survey responses indicate attitudes towards digital technology and language learning were largely positive among respondents. However, there remained some services unconvinced of their benefits, or concerned there could be negative impacts on children. For example, some services felt that English learning should be a focus in the early years, especially for children from a non-English-speaking background. Assuming these concerns hold true within the broader early childhood sector, it may be important to provide services with supporting evidence (e.g., findings from academic research) addressing such concerns. Complementing this material, it may be valuable to highlight case studies from the 2015 and 2016 trial sites that were successful in adopting the ELLA program and realising associated benefits.

Second, based on survey responses, educators were largely comfortable and confident with using digital technology in a preschool setting. If this is true across the entire preschool sector, the nationwide implementation of the ELLA program is likely to be smoother than if additional support is needed to be offered to a large number of services. However, there still exists a considerable portion of educators that reportedly lack confidence or experience with digital technology, and the Department should be aware to make some support or professional development opportunities available to further enhance the capabilities of services in this domain.

Further, the evaluation of the 2015 trial found the apps were introduced into the classroom more effectively after ESA conducted a workshop for services. This suggests that even those educators confident with digital technology would benefit from a workshop to support the implementation of the ELLA program into an early childhood setting. Guidance as to the appropriate techniques to introduce the program will support child learning and may help reduce the risk of services disengaging with the program. In general, ESA (or equivalent) is likely to be required to play an ongoing role in providing guidance and support for services participating in the ELLA program.

When developing the level and nature of the support provided, the Department should be aware of the potentially large uptake of the ELLA program in the next four years; hence, preparation does not only relate to 2017.

The variability in the expected uptake of the program

After a suite of factors are taken into consideration (such as uncertainty as to the cost of the program and the propensity of services to withdraw from the ELLA program), there is significant variability in the expected uptake of the program. In the most optimistic scenario, uptake is estimated to be as high as 33% of all services in 2017 and 76% of all services within four years.

Given the successful implementation of the program is at least, in part, reliant on the appropriate guidance and support for services, the Department should cater for the program to reach more than three-quarters of all services by 2020. The cost, time and resource planning for the future of the program should be developed with consideration towards this upper estimate. However, this requires a resourcing model that can be scaled up or down as needed so as not to incur unnecessary cost in the event that demand is towards the lower end of the estimated range.

It should also be recognised that under the more pessimistic assumptions (particularly in regard to those services that did not complete the survey), demand for the program is estimated to be as low as 7% nationwide. While this lower bound case is less likely to eventuate, this underscores the need for a flexible resourcing model.

Stakeholder engagement

Engaging key stakeholders – such as state education authorities and peak bodies and large providers – will be vital to the successful implementation of the ELLA program. To date, these bodies have largely acted in an observatory or guiding role in the ELLA trial, but it will be prudent to ensure these key stakeholders are more involved to successfully implement the program nationally.

Preschools typically have a relationship with one of the stakeholders mentioned previously. State governments, in their capacity as the primary provider of preschool in their jurisdiction, typically engage with government-run preschools, while private preschools are often a part of a larger kindergarten provider (such as Goodstart Early Learning) or a member of a peak body (such as Early Childhood Australia). These organisations can play a key role as a conduit between ESA (in their capacity as the program managers) and the preschools.

Important information, updates or key milestones in the ELLA program will be most effectively communicated to sites through these organisations. The 2016 evaluation of the ELLA trial identified that services were not always aware of the type of assistance available to support them in introducing the ELLA program. Maintaining open communication with services will reduce the risk of services lacking full information on the program, and engaging with key stakeholders is the most effective and efficient way to establish clear communication channels. The Department should also communicate clearly regarding the role and expectations of these organisations. For example, whether it is asking them to promote ELLA, or is it limited to enabling them to respond to program related enquiries.

Demand management

The Department has the ability to contribute to effective management of demand in endeavouring to ensure the take-up is sustainable and occurs at a level that supports program objectives. For example, the level of marketing and communication is likely to influence this, as will the role assigned to some stakeholders. Further, key stakeholders can assist in either stimulating or limiting demand for ELLA, thus assisting in ensuring that service uptake will not exceed the Australian Government's capacity to deliver the program.

Service capacity to participate

The BYOD model relies on services being able to access tablet technology to support the ELLA program. This raises concerns over whether the ELLA program will be accessible to all services who wish to participate, and if tablet-to-child ratios support children within each participating service to have adequate access to the apps to ensure full program participation.

It is noted that the Department is undertaking several measures to lower the risk that cost barriers will prohibit service participation, including a \$500 grant for up to 1,000 preschools in low socioeconomic status (SES) areas. Additionally, a low-spec version of the ELLA apps is being created to allow the apps to be used on more economic tablet devices.

Emerging competition for educational apps

As digital technology as a learning device in preschools grows, so might the availability of high quality educational apps. Given national guidelines relating to the appropriate amount of screen time for young children and the emerging public debate on this topic, the proliferation of digital learning through apps and tablets may affect the ELLA program, and is likely to require careful monitoring from a broader policy perspective among both the Australian Government and state and territory authorities.

Although the ELLA apps are of high quality, educational apps and digital learning programs are rapidly evolving – and it would be prudent to consider the implications of the emergence of more apps in preschools over time.

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Appendix A: National survey of preschools

By completing this survey, you will be contributing to important research to help us design digital learning tools that are most suited and of greatest benefit to Australian preschools.

Preschools across Australia are being given the opportunity to participate in this survey. The survey should be completed by a member of staff who can represent the views of the preschool (for instance the preschool director, principal, early childhood teacher or educator). ***Only one survey should be completed per preschool.***

To show our appreciation for your time, each preschool that completes the survey will be in the running to win an iPad Pro (valued at \$899) for your preschool. For full terms and conditions, please see the final page of the survey. If you would like to enter the draw, please provide your contact details at the end of the survey (when prompted).

This survey should take you about 30 minutes to complete.

A.1 About the Early Learning Languages Australia (ELLA) program

ELLA is an Australian Government initiative that provides a suite of language-based mobile applications (apps) for preschool children.

The objectives of the ELLA program are to:

- introduce children to words, sentences, and songs in a language other than English;
- give children opportunities to recognise sounds and concepts of the language;
- provide children with appropriate experience and practice in the language; and
- provide engaging and educational play-based language learning experiences.

The ELLA apps are designed to provide preschool aged children the opportunity to develop recognition of the different sounds and concepts of another language through play-based learning. Children are introduced to words, sentences and songs in the language and through age appropriate experiences and practices in the language.

The language activities in each of the apps are aligned to the learning outcomes in the Early Years Learning Framework (EYLF).

A.2 How to complete the survey

You can provide more detailed comments to some questions if you wish.

You can leave your survey at any time. To exit the survey prior to completion, simply close your internet browser. To re-enter the survey and continue from where you left-off, click on the same survey link on the same internet enabled device.

Please note this survey will be treated in confidence and responses will be reported in aggregate, de-identified form to the Australian Government. Individual responses will not be reported and information will only be used for the purpose it was collected.

The survey will remain open until 30 September 2016.

If you have any issues while attempting to complete the survey, enquiries can be directed to: datacollection@deloitte.com.au

Thank you for your participation.

Deloitte Access Economics

Australian Government Statistical Clearing House Approval Number: **02515-01**

A.3 Introduction

What type of preschool service are you involved in?*

- Stand alone preschool service
- Long day care service with a preschool program
- Preschool attached to a government school
- Preschool attached to an independent/Catholic school
- Other – (Please describe) _____

Is your service:*

- Not-for-profit
- For profit
- Unsure

Is your service:*

- Government owned
- Community owned

In which state or territory is your preschool based?*

- Australian Capital Territory
- New South Wales
- Northern Territory
- Queensland
- South Australia
- Tasmania
- Victoria
- Western Australia

What postcode is your service located in?*

What is your role in the service?*

- Director
- Principal
- Early Childhood Teacher
- Educator
- Other (Please describe) _____

Approximately how many four-year-old children are currently enrolled in your preschool program?*

Approximately how many children, in total, are currently enrolled in your service (all children, including those younger than four years old)?*

Approximately how many educators are employed by your service?*

Has your service received government funding to support your adoption of digital technologies in preschool?*

Yes

No

Please describe the type of government funding you received and how this funding was used by your service.

A.4 Technology set-up in your service

Does your preschool/long day care service have an active internet connection?*

- Yes
- No
- Unsure

If yes, please indicate the types of internet access you have:*

- Fixed broadband
- Fibre (to the node)
- Fibre (to the premises)
- ADSL (1 or 2+)
- Cable
- Satellite broadband
- Mobile or Wireless
- Dialup
- Unsure

Does your service have Wi-Fi capabilities?*

- Yes
- No
- Unsure

What are the main uses of your preschool's internet connection?* (select all that apply)

- General browsing
- Sending/receiving email
- Downloading files up to 10MB
- Downloading files greater than 10MB
- Listening to music
- Watching videos
- Updating your service's website
- Downloading TV shows/movies
- Unsure

How would you rate the strength of your service's internet connection?*

- I can always download what I need quickly
- I can most often download what I need quickly
- Sometimes I can download what I need and sometimes I can't
- Downloads take a long time and sometimes don't work
- I can rarely download what I want
- Unsure

Are desktop computers owned by and available in your service?*

- Yes
- No
- Unsure

How many desktop computers does your service have?*

How many are available for children to use?*

How did your service obtain the desktop computer/s?* (select all that apply)

- Paid for using service income (funding and/or fees)
- Paid for with fundraising revenue
- Donated to the service
- Received through a technology-related government program
- Received through a non-technology-related government program
- Personally owned and on loan to the service
- Unsure
- Other – (Please describe) _____

Are you planning to acquire additional desktop computers in the future as learning tools?*

- Yes
- No
- Unsure

Are you planning to acquire desktop computers in the future as learning tools?*

- Yes
- No
- Unsure

How many laptops does your service have?*

How many are available for children to use?*

How did your service obtain the laptop/s?* (select all that apply)

- Paid for using service income (funding and/or fees)
- Paid for with fundraising revenue
- Donated to the service
- Received through a technology-related government program
- Received through a non-technology-related government program
- Personally owned and on loan to the service
- Unsure
- Other – (Please describe) _____

Are you planning to acquire additional laptops in the future as learning tools?*

- Yes
- No
- Unsure

Are you planning to acquire laptops in the future as learning tools?*

- Yes
- No
- Unsure

How many Tablet Devices (e.g. iPad) does your service have?*

How many are available for children to use?*

How did your service obtain the tablet/s?* (select all that apply)

- Paid for using service income (funding and/or fees)
- Paid for with fundraising revenue
- Donated to the service
- Received through a technology-related government program
- Received through a non-technology-related government program
- Personally owned and on loan to the service
- Unsure
- Other – (Please describe) _____

Approximately how old are the tablet device/s?*

- New (under 6 months old)
- 1 year old
- 2 years old
- 3 years old
- 4 years old
- 5 years old and greater
- Unsure

Are you planning to acquire additional tablet devices in the future as learning tools?*

- Yes
- No
- Unsure

Are you planning to acquire tablet devices in the future as learning tools?*

- Yes
- No
- Unsure

Does your service access digital technology through a Bring Your Own Device (BYOD) policy for children to bring devices to use for preschool activities?*

- Yes
- No
- Unsure

What proportion of children bring a device to the preschool?*

- 0% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%
- Unsure

What type of device do children typically bring into the preschool?* (select all that apply)

- Laptop
- Tablet device
- Smartphone
- Unsure

A.5 Use of digital technology as a teaching tool in your service

Does your service have a plan or policy about the use of digital technology as a teaching tool in the preschool that is actively used?*

- Yes
- No
- Unsure

Please select the plan and/or policy your service has in relation to the use of digital technology as a teaching tool.* (select all that apply):

- IT use policy
- IT strategy
- Other (please describe) _____
- Unsure

What is the focus of the IT plan and/or policy in use at your preschool?* (select all that apply)

- Supporting technology infrastructure in the preschool (through a BYOD model or through the service purchasing technology);
- How technology is used within the preschool – such as screen time or implementation guidelines.
- Other (please describe) _____
- Unsure

How often does your service use digital technology as a teaching tool for children?*

- At least once a day
- Approximately two to four days a week
- Approximately once a week
- Less than once a week but more than once a month
- Less than once a month but more than every six months
- Less than once every six months
- Never

How do you use digital technology as an educational tool in your service?*

Please rank those that apply, starting from the most common. Please place a (1) in the box for the most common use, (2) in the box for the next most common use, and so forth.

_____ Research

_____ Taking photos

_____ Recording videos

_____ Watching videos

_____ Educational apps

_____ Communication (skyping/phoning/emailing)

_____ Viewing social media

_____ Uploading to social media

_____ Other (Please provide some examples)

Tablet devices in your service

Thinking about *tablet devices* in particular

To what extent do you agree or disagree with the following statement: Tablet devices can be an effective tool for preschool children? *

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain why.

How often does your service use tablet devices as an educational tool for preschool children?*

- At least once a day
- Approximately two to four days a week
- Approximately once a week
- Less than once a week but more than once a month
- Less than once a month but more than every six months
- Less than once every six months
- Never

How do you generally use tablet devices as an educational tool in your service?*

Please rank those that apply, starting from the most common. Please place a (1) in the box for the most common use, (2) in the box for the next most common use, and so forth.

_____ Research

_____ Taking photos

_____ Recording videos

_____ Watching videos

_____ Educational apps

_____ Communication (skyping/phoning/emailing)

_____ Viewing social media

_____ Uploading to social media

_____ Other (Please provide some examples)

Thinking about educational apps in particular:

How often do you use educational apps as a teaching tool for preschool children?*

- Daily
- Approximately two to four days a week
- Approximately once a week
- Less than once a week but more than once a month
- Less than once a month
- Rarely
- Never

Please list the educational apps that you currently use or have used previously.

- App 1
- App 2
- App 3
- App 4
- App 5
- Any others?

Which of these educational apps do you pay to use?

- App 1
- App 2
- App 3
- App 4
- App 5
- Any others?

On average, how confident do the educators in your service feel about using tablet devices as a teaching tool for preschool children?*

- Very comfortable
- Comfortable
- Neither comfortable nor uncomfortable
- Slightly uncomfortable
- Not comfortable at all
- Unsure

Please explain why.

Have educators in your service undertaken any training on the use of digital technology as a teaching tool for preschool children?*

- Yes
- No
- Unsure

Please describe.

Would you be interested in training if it were available?*

- Yes
- No
- Unsure

Have you thought about increasing the use of tablet technology for educational purposes in your service?*

- Yes
- No
- Unsure

Please explain why.

To what extent do you agree or disagree with the following statements?*

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Using tablets with educational apps in preschools may help to boost social interaction between children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investing in digital technology is a priority for our preschool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given the level of exposure children have to screens outside of preschool – preschool should be free of digital technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tablets can be easily damaged and are not appropriate in a preschool setting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On average, how supportive do you think parents and guardians are likely to be about increased use of tablet technology featuring educational apps by their preschool aged children within your service?*

- Very supportive
- Supportive
- Neither supportive nor unsupportive
- Very unsupportive
- Unsure

Please explain why. What measures could be put in place to increase family support of tablet technology for educational purposes?

Please estimate the percentage of preschool children in your service who have access to tablet devices at home.*

- 0 – 20%
- 21 – 40%
- 41 – 60%
- 61 – 80%
- 81 – 100%

A.6 Language learning and cultural awareness

Does your service currently include learning a language other than English as part of your preschool program?*

- Yes
- No
- Unsure

Please describe the type of activities undertaken to support learning languages other than English.

Have you included language learning in your preschool program in the past?*

- Yes
- No

Please describe why you no longer do this.

Why not?*(select all that apply)

- Our service has limited experience in this area
- It is not appropriate for preschool children
- Families of children who attend my service would not be interested
- Other learning areas have a higher priority
- Other – (Please describe) _____

Does your service currently include learning about other cultures as part of your preschool program?*

- Yes
- No
- Unsure

Please describe the type of activities undertaken to learn about other cultures.

Have you included learning about other cultures in your preschool program in the past?*

- Yes
- No

Please describe why you no longer do this.

Why not?*(select all that apply)

- Our service has limited experience in this area
- It is not appropriate for preschool children
- Families of children who attend my service would not be interested
- Other learning areas have a higher priority
- Other – (Please describe) _____

Please estimate the percentage of preschool children in your service who speak a language other than English at home.*

- 0% - 20%
- 21%- 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%
- unsure

In the next 12 months, how interested is your service in incorporating learning a language other than English in your preschool program?*(Please note, this refers to any learning of a language other than English, not just though the ELLA program).

- Very interested
- Interested
- Neither interested nor uninterested
- Little interest
- No interest
- Unsure

Please explain why.

In the next 12 months, how interested is your service in incorporating learning about other cultures into your preschool program?*

- Very interested
- Interested
- Neither interested nor uninterested
- Little interest
- No interest
- Unsure

Please explain why.

A.7 Interest in ELLA

Over the next two years, the Australian Government will provide \$5.9 million to expand the ELLA program to all preschool services nationally from the 2017 school year.

The expansion will provide more preschool children, including those in regional and remote areas, with the opportunity to study a language other than English on an opt-in basis through play-based learning using mobile devices.

There are currently five languages available through the ELLA program, with seven play-based apps for each language – Arabic, Indonesian, Chinese (Mandarin), Japanese and French.

Based on what you currently know about ELLA, if it were available now, would you start using it in your service?*

- Definitely yes
- Probably
- Unsure
- Probably not
- Definitely not

Why? (select all that apply)

- I don't know enough about the ELLA program
- I would need more information before making a decision
- I don't believe that the ELLA program would benefit children
- We would need to consult internally before making a decision
- We would need to consult with parents before making a decision
- We would need to consult with local primary schools before making a decision
- Our families would not like the idea of the ELLA program
- Our service doesn't have the technology to implement the ELLA program
- I am concerned about the time and cost that might be involved
- Our service has other curriculum priorities
- Other – (Please describe) _____
- Unsure

Indicate whether any of the following statements would make you more or less likely to use ELLA in your service:*

	More likely	No change	Less likely
The ELLA apps are available to your service free of charge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Educators do not need to be proficient language teachers to deliver the ELLA program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ELLA apps are aligned to the learning outcomes in the Early Years Learning Framework.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Educators have control over the amount of time the children use the ELLA apps for each day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Services must supply their own tablet devices (either through BYOD or by providing shared tablet devices) to start using the ELLA program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Services are responsible for installing the apps and applying security settings to the tablet devices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shock covers are available for purchase which significantly reduce risk of damage to tablets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Services in low SES areas can apply for grants or vouchers of up to \$500 to help purchase tablet devices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Educators are able to access online training materials and other resources to help deliver the ELLA program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An ELLA help desk is available that services can call or email for support.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An ELLA Facebook page is available to educators to share experiences and learn how other services are using ELLA on a day-to-day basis.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a service within each region which is experienced in delivering the ELLA program and services can contact them for support.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(Continued)	More likely	No change	Less likely
A workshop will be held within my state or territory in the first half of 2017 to help support implementation, provide networking opportunities and discuss innovative ways to approach the program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An interactive webinar will be facilitated in the first half of 2017 to help support implementation and discuss innovative ways to approach the trial.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is an ELLA app for educators, which is designed to help educators support children's interactions with the apps.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is an ELLA app for families, which is designed to help families support language exposure in the home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A number of new languages are currently under development for the ELLA program, and will be introduced.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ELLA program is expected to be available in the early years of primary school at some point in the future, allowing for language pathways to be developed in the region.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An evaluation of the ELLA trial last year found that the trial had shown positive results in increasing language exposure for some preschool children.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If your service decided to enrol in the ELLA program, from which parties does permission need to be sought?* (select all that apply)

- Education department
- Centre owner
- Parent committee
- School principal
- School council
- Families
- Other (Please describe) _____
- Unsure

Would your service be willing to pay for the ELLA program?*

- Yes
- No
- Maybe

Please indicate what you think a reasonable amount would be.*

Note – the following prices are for the package of seven apps (one language), all support materials and access to a help desk for technical support.

- \$1 - \$20 per annum
- \$21 - \$50 per annum
- \$51 - \$100 per annum
- \$101 - \$250 per annum
- \$251 - \$500 per annum
- Unsure

Please explain why.

What language is your service most interested in, should you decide to use ELLA?* (select all that apply)

- Chinese (Mandarin)
- Arabic
- French
- Indonesian
- Japanese
- No preference
- Aboriginal or Torres Strait Islander languages
- German
- Italian
- Hindi
- Korean
- Modern Greek
- Spanish
- Turkish
- Vietnamese
- Other: (Please specify) _____

If you have selected 'other', why?*(select all that apply)

- Existing language program in preschool
- Reflective of broader community language
- Local school offers this language
- Educators have a familiarity with this language
- Other – (Please describe) _____

A.8 Final questions

As a final reflection, please indicate whether you intend to participate in the ELLA program:*

- Next year (in 2017)
- In the next two years (before 2019)
- In the next three years (before 2020)
- In more than three years' time (during or after 2020)
- Never/Not sure – (Please describe why) _____

Why?*

- I would like to learn more about the benefits of the ELLA program
- It will take some time to acquire the resources required to support the ELLA program
- It will take some time to develop Educator capacity to deliver the ELLA programme
- It will take some time gain permission to enrol in the ELLA program
- Other – (Please describe) _____

Do you have any suggestions or other comments or observations you would like to make about the ELLA program?

Limitation of our work

General use restriction

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