



Malatest
International

Evaluation of SPARX

February 2016



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Executive Summary

About SPARX

SPARX (Smart, Positive, Active, Realistic, X-factor thoughts) is Initiative Four of the Prime Minister's Youth Mental Health Project.

SPARX is a computer-based E-therapy programme developed based on evidence from a randomised controlled trial. SPARX is an interactive fantasy game that delivers cognitive behavioural therapy (CBT).¹ It is publically available at <https://www.sparx.org.nz/>. SPARX is not intended to replace therapy, counselling or medication and can be used alongside other interventions.

The evaluation

The purpose of evaluating SPARX is to assess:

- The effectiveness of the roll out of the service
- Whether the service reaches the target group
- The effectiveness of the service for youth
- Whether there are any opportunities for improvement.

The evaluation has drawn information from interviews with and reports from the SPARX project team, SPARX monitoring data, interviews with and surveys² of both young people and providers who have used SPARX.

It is important to note that the extent the evaluation can draw conclusions about SPARX is limited because SPARX has continued to be modified and promoted over the course of the evaluation and further development and promotion is planned. Information from the evaluation is therefore most useful in informing the Ministry about progress, how SPARX is being used, highlighting what is working well and areas where SPARX could potentially be strengthened.

The effectiveness of the roll out of SPARX

The Ministry of Health provided funding to transition SPARX from a small-scale academic tool to national, open-access operation. This change involved significant

¹ Sourced from the SPARX training for health professionals document available at: <https://www.sparx.org.nz/sites/default/files/sparx-training-for-health-professionals.pdf>

² Note that while the survey results provide valuable contextual information they cannot be considered representative of all providers and youth

investment and some technical issues were not able to be addressed until the recent updates.

Promotion of SPARX initially focused on providers. Providers have an important role in introducing SPARX to young people and there is reasonably high awareness of SPARX amongst providers (including health providers and school pastoral care providers). Results from the survey of 317 practitioners working in the youth mental health sector³ found that two-thirds (62%) were aware of SPARX. Awareness was highest amongst nurse practitioners (83%) and those in specific youth mental health roles (82%).

Although SPARX has been promoted to young people and providers, promotion is ongoing. Following changes to the SPARX platform, an increased focus on raising awareness amongst youth is planned.

Recommendation 1: Ongoing promotion to providers and young people is required. Communication strategies should include strategies for reaching young people and also the different people and places young people may go for help.

Recommendation 2: Effective promotion is resource intensive. Aligning the promotion of SPARX with the promotion of other online tools and supports for youth mental health would improve cost effectiveness. For example, including SPARX in single point of entry tools and practitioners' electronic guides to care pathways.

SPARX is an evidence based tool amongst a range of websites, online tools and apps for young people to use independently or for providers to recommend to young people. Providing further guidance about the target groups, evidence for effectiveness and different approaches to using the different sites would be beneficial in assessing what is in place and identifying any duplication and gaps.

Recommendation 3: Explore options for enhancing the network of practitioners in leadership roles for existing and new online mental health tools. Given the level of demand on the time of those involved, there may be scope for investing in national level facilitation of such a network.

³ This survey was completed as part of the evaluation of the Primary Youth Mental Health Project (2015) and included questions on SPARX. As noted above, it was distributed to the youth mental health sector generally, not just to SPARX users.

Reaching the target group

At the end of December 2015, 4,116 young people had registered on SPARX.

The target group for SPARX is young people aged 12 to 19 years with mild to moderate mental health issues. SPARX has reached some young people in the target age range but is also being used by some older youth and those with more severe mental health issues (as assessed by the SPARX PHQ-A tool).

Young people participating in the evaluation of SPARX found out about SPARX in different ways. Nearly half (41%) found it by searching the internet or seeing posters in their schools while two-thirds (59%) heard about it from someone else, including healthcare providers and school staff.

The target group covers youth with a wide range of profiles and situations. In the SPARX monitoring data, there was no significant association between age or gender and the duration and frequency of SPARX use. Young people liked:

- Being able to access SPARX in private
- Having something they could use independently of their parents or other support people (for example, doctors, guidance counsellors).

There were mixed views about:

- Age appropriateness - some youth and providers thought SPARX was more suitable for 12 to 14 year olds than older age groups. However, SPARX monitoring data show use of SPARX across the age range and by some older than 19.
- The game aspect of SPARX – this was what some most liked about SPARX but others were unwilling to engage with SPARX because they were not interested in games.
- The SPARX graphics – the graphics limited the appeal of the game to some young people with expectations set by the standards of high budget studio games.

Effectiveness of SPARX for youth

At the end of December 2015, nearly one-quarter of the 4,116 young people registered on SPARX went on to complete module four and 10% to complete the final module.

Primary care health providers interviewed for the evaluation reported that completion of as little as one module is to be expected with a tool targeting young people. They said young people access supports such as SPARX when they feel they are in crisis but may stop using them once the crisis passes. Completing additional

SPARX modules may allow young people to build resilience and the tools to manage the next crisis, but is more difficult to encourage.

Young people complete PHQ-A questionnaires at the beginning of their SPARX journey and again after modules four and seven. Results show that there is an overall trend of improvement in depressive symptoms, consistent with the evidence base built in its development. Young people with more severe symptoms following module one showed the greatest improvement.

Young people who participated in the evaluation generally used SPARX because they wanted to improve their ability to manage their low mood or anxiety. Overall:

- Approximately half felt that SPARX had helped them improve their wellbeing (54%) and their ability to manage their own wellbeing (62%)
- Nearly three-quarters (72%) felt SPARX was useful and a good option for young people like them.

Most of the young people responding to the evaluation had used SPARX independently in their own time, even where SPARX was suggested to them by a health provider.

Providers had different views about the youth they referred to SPARX, reasons for recommending SPARX and how they linked youth to SPARX. Different approaches were influenced by the different health provider roles and included:

- Introducing SPARX as a resilience tool
- Giving the young person information about how to access SPARX
- Using SPARX as a 'conversation starter'
- Using SPARX as an intervention to improve outcomes or to maintain youth who may be on waiting lists to see a specialist provider.

Many of the providers who recommended SPARX to young people did not actively follow-up about SPARX and did not receive feedback on its effectiveness. Other practitioners reported positive feedback and most held the view that SPARX was beneficial for the young people who use it.

There is the potential to improve the effectiveness of SPARX by explaining the different ways it can be used and the strengths and potential risks.

Recommendation 4: Provide further guidance, preferably by email, to practitioners on the evidence supporting SPARX's effectiveness and best practice in the range of different approaches that can be used to deliver SPARX successfully.

Young people with more severe mental health issues are identified in SPARX by their responses to the quizzes and given repeated prompts to seek more help.

Recommendation 5: SPARX has benefited from extensive clinical oversight and input and has been rigorously reviewed. The option of taking further action to treat young people with severe symptoms was explored in the development of SPARX, and there is no evidence from the evaluation to suggest young people are put at greater risk. However, there may be scope for taking further action when such young people are identified (with the aim of connecting them with more intensive services).

Opportunities for improvement

The evaluation identified a number of opportunities to strengthen SPARX. Many of these have also been identified by the SPARX team and addressing them is part of their ongoing work programme.

IT issues and the lack of compatibility of SPARX with Chrome were substantial barriers for users, that are known and being addressed. As an online tool SPARX will inevitably not reach young people who do not have access to the internet or an internet capable device. An important implication is a potential impact on SPARX's effectiveness in improving equity. Localities with the highest proportions of at risk young people and those in geographically isolated areas may be less likely to be able to access SPARX. However, it is important that the IT platform and connectivity reach as many young people as possible. Young people frequently access online tools using mobile devices. Enabling this level of access is not part of the current SPARX project but is something the SPARX team are pursuing.

Recommendation 6: The Youth Mental Health Project steering group and the SPARX team consider ways to improve access for disadvantaged youth and those in rural and remote areas. This may be through improved access to the internet and/or a focus on promoting SPARX through schools and youth-specific service providers and helping these organisations to set up access to SPARX.

As noted above, features of SPARX, such as the game design, were barriers for some young people but facilitators for others. To some extent this is an inevitable result of the diversity of 12 to 19 year olds. SPARX will never have a budget to enable design and development on a par with the sophisticated computer games many youth play. However, continued review and improvement of the presentation and the gaming feature may enhance its appeal.

Recommendation 7: The SPARX team continue to develop the IT platform for SPARX explore opportunities to resolve design and technical issues that lead to lower adherence.

The evaluation aimed to assess the reach of SPARX. However, future developments might lead to greater reach than is currently the case, and could potentially change the profile of the participant population. A later outcomes focussed evaluation will be important in considering reach, effectiveness and the value for money SPARX offers taking into account the ongoing costs of maintaining SPARX and supporting provider and youth users, and the costs of other ways of supporting young people with mild to moderate conditions. SPARX is included within the economic evaluation of the Prime Minister's Youth Mental Health project that will be completed in mid-2016.

Recommendation 8: Ongoing monitoring is necessary to track the progress SPARX is making in reaching providers and the target group of youth, and to identify any issues that could be addressed. SPARX monitoring data provides a comprehensive foundation for monitoring but qualitative data to complement the monitoring data would help identify any potential issues and solutions.

Recommendation 9: Complete an outcomes evaluation when SPARX is fully rolled-out and include a value for money component.

1. Introduction

1.1 The Prime Minister's Youth Mental Health project

Initiative Four of the Prime Minister's Youth Mental Health Project aims to review and implement an internet based E-therapy tool for young people. E-therapy has the potential to provide an effective alternative to traditional treatments. \$2.680 million has been allocated for this initiative over the four-year period 2012/13 to 2015/16.

1.2 About SPARX⁴

SPARX (Smart, Positive, Active, Realistic, X-factor thoughts) is a computer-based E-therapy programme, publically available at <https://www.sparx.org.nz/>.

With the help of young people, Auckland University researchers developed SPARX for young people aged 12 to 19 years who are experiencing (or at risk of experiencing) mild to moderate depression and/or anxiety. It is a self-help resource intended to complement other options available to young people in both the primary and specialist services.

SPARX is a self-help interactive fantasy game that delivers cognitive behavioural therapy (CBT) in an engaging and appealing format. CBT teaches skills about how to cope with negative thoughts and feelings by helping people to think in a more balanced and helpful way and getting them to do things they enjoy or that give them a sense of achievement. SPARX uses evidence-based CBT skills that focus on:

- Scheduling activities
- Problem solving
- Learning to recognise automatic thoughts
- Stopping negative/unhelpful thoughts
- Changing unhelpful thoughts into helpful ones
- Relaxation and self-calming techniques
- Interpersonal and communication skills.

Users progress through seven modules and are led by a 'guide'. After modules one, four and seven they complete a mood quiz containing the Patient Health

⁴ Sourced from the SPARX training for health professionals document available at: <https://www.sparx.org.nz/sites/default/files/sparx-training-for-health-professionals.pdf>

Questionnaire-9 modified for adolescents (PHQ-A)^{5 6}. Users with severe ratings are prompted to seek more help. Users can sign up for emails and text messages for reminders to return to SPARX or prompts to get more help.

Unmet need for general health care is an issue for young people in New Zealand. Levels of unmet need in the New Zealand Health survey were 22.0% overall (29.1% females and 15.6% males). In a survey of over 9,000 New Zealand secondary school students, 17% had not seen a doctor or nurse when needed in the last 12 months⁷. Reports from youth-specific service providers is that unmet need for youth with mental health issues is likely to be higher. In Australia, estimates are that up to 80% of young people with mental health needs receive no treatment, reflecting both lack of treatment availability and reluctance to seek help because of perceived stigma, discomfort discussing mental health and/or preference for self-help⁸.

One of the aims of the YMHP is to improve access to mental health services for young people aged 12 to 19 years with mild to moderate mental health issues. E-therapy has the potential to improve access as it may be more appealing to some young people. SPARX is not intended to replace therapy, counselling or medication and can be used alongside other interventions.

1.3 Evaluation purpose, logic model and evaluation framework

The evaluation aimed to assess the effectiveness of the SPARX roll out, evaluate the effectiveness of the service, whether the service reaches the target group and whether there are any opportunities for improvement.

A logic model was developed to describe the planned inputs, activities, outputs and outcomes of SPARX (Appendix One). The model's outcomes align with those of the Prime Minister's Youth Mental Health Project.

The high level questions were linked to indicators and data sources in an evaluation framework. The questions and indicators were developed in consultation with the

⁵ Kroenke K, Spitzer R, Williams J (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine* 16 606-613.

⁶ Johnson J, Harris E, Spitzer R, Williams J (2002). The patient health questionnaire for adolescents. *Journal of Adolescent Health*. 30 (3) 196-204.

⁷ Denney et al., 2011 – as cited in KPMG/University of Otago (2013, Feb 1). *Value for Money review of sexual and reproductive health services*. Wellington: Ministry of Health.

⁸ Ebert D, Zarski A-C, Christensen H, Stikkelbroek Y, Cuijpers P, Berking M, Riper H (2015). Internet and computer-based cognitive behavioural therapy for anxiety and depression in youth: a meta-analysis of randomised controlled outcome trials. *PLoS10(3):e0119895* doi:10.1371/journal.pone 0119895.

Ministry of Health and the National Institute for Health Innovation (NIHI) and are summarised below (Table 1).

Table 1: Key evaluation questions.

Evaluation area	Evaluation questions
Implementation	How was SPARX developed? Were there any implementation issues? How does SPARX align with other online mental health tools?
Reach	How effectively has SPARX been promoted to health providers? How effectively has SPARX been promoted to youth? How effective is SPARX in reaching the target group? Has SPARX contributed to improving equity?
Effectiveness	Is SPARX safely and reliably delivering the planned service to the target population? Are young people more able to self-manage or seek help? How effective is SPARX in improving youth mental health and well-being?
Programme improvement	How could SPARX be made a more attractive option for providers who want a resource to help a youth experiencing mild to moderate mental health issues? How could SPARX be made a more attractive option for youth?

2. Evaluation methods

The logic model and evaluation framework provided a theoretical foundation for the evaluation. A mixed methods approach was used for data collection which was focussed on youth who had used SPARX and on providers registered with SPARX. The evaluation also included the wider population of youth and providers to provide information about awareness and attitudes and knowledge of non-users (Figure 1). These are described in more detail in subsequent sections.

Data from:	Providers	Young people
SPARX registered users	Providers registered with SPARX <ul style="list-style-type: none"> Survey of providers registered with SPARX (33) Interviews with providers identified through SPARX survey (7) 	Youth registered with SPARX <ul style="list-style-type: none"> Survey of youth (49) Interviews with SPARX users (15) SPARX monitoring data from April 2014 to December 2015
Providers identified through related projects	Providers using SPARX <ul style="list-style-type: none"> Interviews about SPARX with providers identified as SPARX users through data collection for Youth Primary Mental Health Project (8) 	
Data from related evaluations	Youth Primary Mental Health Project evaluation <ul style="list-style-type: none"> National survey of 317 providers working with youth Interviews with schools, health and social sector providers Prime Minister's Youth Mental Health Project evaluation <ul style="list-style-type: none"> Interviews with health providers, school staff and community members in six case study areas 	Prime Minister's Youth Mental Health Project evaluation <ul style="list-style-type: none"> OurSCHOOL survey of 3,600 youth Focus groups with youth (aged 12 to 19) at secondary schools and school leavers. Discussion included SPARX where young people were aware of it (a small proportion)
Other data sources	Literature review, interviews with national stakeholders (4), SPARX monitoring and internal	

Figure 1: Overview of data sources for the SPARX evaluation report.

2.1 Data collected from young people

2.1.1. National context

The overarching evaluation of the Prime Minister's Youth Mental Health project⁹ includes six in-depth locality case studies. Localities are Northland, West Auckland, Hawkes Bay, Lower Hutt/Wainuiomata, Christchurch and Invercargill. The locality case studies included a survey of secondary school students (the OurSCHOOL survey) and focus groups with youth.

The OurSCHOOL survey (reference) was completed by 3,006 secondary school students (years 9 to 13). Surveys were completed in classrooms under the supervision of researchers. The survey included a question added to contribute to the SPARX evaluation:

- In the last 12 months, have you contacted or used any of the following: Youthline/Lifeline, other telephone support, SPARX, Common Ground, LifeHack, Other information?

2.1.2. Online survey of youth registered with SPARX

The evaluation included an online survey of young people who registered on SPARX between April 2014 and August 2015. The survey questions and recruitment process were reviewed by the New Zealand Ethics Committee (NZEC) in the project planning phase to ensure they were ethically sound. Invitations to participate were distributed by NIHI, the SPARX provider, so identifying information was not passed to the research team. The survey was short (approximately ten minutes) and a prize draw for a small incentive (\$100 gift card) was offered for participation.

Overall:

- NIHI sent survey invitations to 816 young people on our behalf (excluding 34 invitations that went to invalid email addresses). NIHI followed up the initial survey invitation with a single reminder.
- 49 young people completed the survey, a response rate of 6%.

Table 2 compares SPARX users overall and those who completed the survey. Compared to the population of youth who have used SPARX, evaluation survey respondents in the 15 to 17 age group were over-represented, and those in the 14 and under age group were under-represented.

⁹ The evaluation of the Prime Minister's Youth Mental Health project will be completed in 2016.

Table 2. Characteristics of young people who used SPARX and those who completed the evaluation survey. SPARX user data relates to young people who registered and completed the first SPARX module. Users could select multiple ethnicities (Source: NIHI monitoring data, October 2015).

User characteristics		Evaluation survey (n = 49)	SPARX users (n = 1,573)	New Zealand young people aged 15-19 (2013 Census)
Age when first used SPARX	11 or younger	0%	7%	
	12-14	14%	34%	
	15-17	63%	37%	
	18-19	10%	11%	
	Older	12%	11%	
Ethnicity (select all that apply)	Māori	13%	13%	20%
	Pacific	2%	3%	10%
	Asian	8%	2%	13%
	New Zealand European	72%	81%	65%
	Other	6%	10%	16%

2.1.3. Interviews with SPARX users

Young people who completed the SPARX user survey were asked whether they were willing to be interviewed to discuss their experience with SPARX. Interviews were scheduled by email and/or text and conducted over the phone. While young people were invited to have a parent, friend or other person present when they answered the questions, only one asked for that support. Young people were informed the interviews were voluntary and reporting would ensure their anonymity.

A semi-structured interview guide was used and interviews were audiotaped and transcribed where the young person consented. Three interviews were not able to be recorded and detailed notes were taken.

Overall:

- 21 people consented to be contacted for interviews (43% of survey respondents)
- 15 young people responded to invitations and completed interviews (71% of those who consented to be contacted).

2.1.4. SPARX Monitoring data

NIHI provided raw SPARX monitoring data covering the period April 2014 to December 2015. The data included 4,112 young people who registered SPARX. PHQ-A quizzes were completed at the end of modules one (by 1,653 users), four (by 396 users) and seven (by 166 users).

2.2 Data collected from practitioners/providers

2.2.1. A national survey

An online survey of practitioners in the youth mental health sector was developed for the evaluation of the Youth Primary Mental Health Service. The survey included the following questions about SPARX:

- Which of the following self-help e-therapy tools for youth are you aware of (SPARX, Common Ground, The Lowdown, Lifehack or other)?
- Do you have the information cards about SPARX that you can give to young people?
- Do you have any comments about SPARX and its usefulness for young people you work with?

Invitations to the survey were distributed by District Health Boards and Primary Health Organisations to staff with leading roles in youth mental health (including managers and practitioners. Those completing the survey were encouraged to forward to other practitioners who might be interested. A total of 317 surveys were completed. No denominator is available.

2.2.2. A survey of practitioners registered with SPARX

The evaluation included an online survey of practitioners who registered on the SPARX website between April 2014 and August 2015. The survey was short (approximately ten minutes) and a prize draw for a small incentive (\$100 gift card) was offered for participation. Overall:

- Survey invitations were emailed to 217 practitioners
- 33 practitioners completed the survey (15% response rate).

Survey respondents included:

- **Medical practitioners:** Nurses in primary care (2), nurse practitioners (2), general practitioner (1), practice manager (1), adolescent psychologist (1), adolescent psychiatrist (1), other youth mental health specific role (11).
- **School staff:** School nurse (1), pastoral care provider (5).
- **Other:** Violence intervention network coordinator (1), youth work agency manager (1), NGO family support (1), health promoter (1).

2.2.3. Interviews with practitioners registered with SPARX

Both the survey of practitioners registered on SPARX and the national survey of practitioners in the youth mental health sector (conducted as part of the Primary Youth Mental Health Project evaluation) asked whether respondents would be willing to complete phone interview about SPARX. Overall, 15 practitioners were interviewed:

- From the survey of practitioners registered on SPARX:
 - Nine practitioners consented to be contacted (27% of survey respondents).
 - Seven practitioners responded to invitations and were interviewed (78% of those who consented).
- From the Primary Youth Mental Health project survey:
 - 26 practitioners consented to be contacted (8% of survey respondents).
 - These practitioners were re-contacted and interviewed specifically about SPARX and eight interviews were completed.
- From the YMHP locality case studies: Health and social sector providers and school pastoral care staff were interviewed individually or in groups as part of the locality case studies for the overarching evaluation of the youth mental health project.

2.2.4. Other sources of data

The evaluation drew data from other sources including:

- **Literature:** Published reports on the effectiveness of online mental health tools for young people.
- **Discussion with the NIHI project team:** The evaluators discussed the evaluation project with the SPARX project team. Discussion of draft evaluation findings in a workshop were incorporated into this final report.
- **Analysis of NIHI monitoring and internal evaluation reports:** The SPARX project team produce monitoring reports and evaluation reports on a quarterly basis. Reports cover the period April 2014 to December 2015.
- **National stakeholder interviews:** Evaluators completed four interviews with national stakeholders, who were either managers of other online mental health tools for young people or had been in leadership positions at some stage in their development. These interviews focused on SPARX's place within the system of online e-health tools targeting youth mental health, views on SPARX's effectiveness and opportunities for improving SPARX and the sector as a whole. Two interviews were recorded and transcribed and two were recorded as notes during the interview.

2.2.5. Qualitative data analysis

Qualitative data were collected from both young people and practitioners using the methods outlined above. Transcriptions of recorded interviews and the notes were analysed using a thematic approach. Interview and qualitative comments from the online surveys were organised using the evaluation questions and sub-questions in the evaluation framework.

The data available for each question were reviewed to develop a list of key themes. A grid of themes and respondent types (e.g. young people, practitioner types) was populated with frequencies, descriptions of variation in the themes and exemplar quotes. These outputs were combined with the outputs of the quantitative analysis and used to write the report.

2.2.6. Quantitative data analysis

Quantitative data from the online surveys were analysed using a primarily descriptive approach (frequencies and means) due to the relatively small number of responses.

The larger number of records available in the monitoring data allowed statistical tests of significance and effect size to be employed. Tests were selected based on the comparison being made, and included:

- Paired samples t-tests: Where results PHQ-A quiz results at two points in time were compared for those completing both of the compared modules.
- One-way ANOVA: Analysis of variance in PHQ-A results recorded by young people with different symptom severities and demographic characteristics who completed quizzes at multiple points in time.

Tests were only carried out where there was a theoretical possible relationship between the tested factor and dependent variables. All tests were carried out using the Statistical Package for the Social Sciences (SPSS).

2.2.7. Strengths and limitations

The following should be kept in mind when interpreting the evaluation findings:

- **Self-reported:** Many of the findings sourced from interviews and from the online survey are self-reported in hind-sight. For example, young people are asked to reflect on their experience with SPARX and comment on the difference it made for them.
- **Online:** Survey invitations were distributed online. It is possible that young people who do not like the online medium were less likely to respond to online surveys, so their views may be under-represented. However, SPARX is also an online tool.
- **Bias towards those who remember and engaged with SPARX:** Young people who engaged with SPARX enough to remember it and be interested enough

to open an email asking for feedback on it may have been more likely to complete the survey. The views of other young people may be under-represented.

- **Response rate:** Both the professional and youth surveys had low response rates, though they are consistent with some other pieces of similar research. It is important to note that the email addresses were recorded in the SPARX system for some of the survey invitations up to 18 months ago, so it is likely that some have changed or become inactive since then. Both young people and practitioners who responded to the online survey recorded detailed free-text comments providing a rich source of qualitative data to complement interview data.

Findings are also complemented by survey responses and interviews for the evaluation of the youth primary mental health service which collected a larger number of responses.

Monitoring data from assessments completed while using SPARX provided clinical data on rates of improvement for young people who have used SPARX.

3. Development of SPARX

Summary and discussion points

SPARX was developed by academics at the University of Auckland and tested using a randomised controlled trial, which was published in 2012. Results demonstrated significant improvements for the young people who used SPARX. The SPARX Research Team created an online version of SPARX with funding from a Health Research Council Partnership Grant. The Ministry of Health provided funding to transition SPARX to national, open-access operation. This change involved significant investment and some technical issues (such as the issue that arose post-roll out with SPARX functionality in the popular Chrome browser) were not able to be addressed until recently.

There is a wide range of tools available online to support youth mental health. SPARX uses New Zealand evidence and has been clinically tested for adolescents. There is some overlap, but it is ideal that there be a range of options available for young people to choose from given diversity in taste, issues and situations. There is scope for further development of the existing community of practice for leading figures responsible for the various tools available.

It is important to note that SPARX has continued to be modified and promoted over the course of the evaluation. Information from the evaluation is therefore most useful in informing the Ministry about progress, how SPARX is being used, highlighting what is working well and areas where SPARX could potentially be strengthened. A later evaluation of what SPARX has achieved and incorporating a value for money analysis may also be warranted.

3.1 University of Auckland randomised controlled trial (Merry et al., 2012)¹⁰

The University of Auckland completed a randomised controlled trial to assess whether computerised Cognitive Behavioural Therapy (CBT) could reduce depressive symptoms in young people with mild to moderate depression as much or more than treatment as usual.

Participants in the trial were recruited from young people seeking help for depression from youth clinics (providing primary health care), general practices, school-based counselling services and school guidance counsellors. Selection criteria were used to determine eligibility for inclusion in the trial. Criteria included level of

¹⁰ Merry S, Stasiak K, Shepherd M, Frampton C, Fleming T, Lucassen M (2012). The effectiveness of SPARX, a computerised self help intervention for adolescents seeking help for depression: randomised controlled non-inferiority trial, *BMJ* 2012;344:e2598.

depression (mild to moderate only), parental consent if under 16 years, at least one year of schooling in English and access to a computer. Exclusions included severe depression, having another mental health condition, no access to a computer and cognitive or physical impairments that precluded the use of a computer programme.

A total of 187 young people were recruited for the trial; half were randomly assigned to receive the computerised CBT in SPARX and the remaining half received treatment as usual (i.e. face to face therapy provided by trained counsellors or psychologists)¹¹.

Research assistants were trained to undertake ratings using the Children's Depression Rating Scale Revised. The research assistants did not know if the young people were in the SPARX or treatment as usual group.

As well as the observer ratings, young people also self-rated themselves on a range of scales which were chosen based on their psychometric properties and ease of use.

Self-assessments and assessments by trained research assistants were undertaken at the start, after treatment (completion of at least four of the seven SPARX modules over a period of four to seven weeks) and at a three-month follow-up.

The clinicians also rated change on the improvement domain of the clinical global impression scale, which allows change relative to the baseline to be assessed. SPARX achieved better outcomes than treatment as usual, and maintained these at the three-month follow-up. SPARX also had significantly higher remission rates. The clinician global impression-improvement rate did not differ significantly between the two groups.

The trial concluded that use of the SPARX programme resulted in a:

“...clinically significant reduction in depression, anxiety, and hopelessness and an improvement in quality of life”.

The results were seen as impressive given SPARX is an entirely a self-help resource. Adolescents enjoyed SPARX and adherence to the programme was high. SPARX is at least as good as treatment as usual (face to face therapy), with the advantage of being cheaper and easier to disseminate.

¹¹ Of the 213 young people assessed to participate, 26 did not meet the eligibility criteria, leaving 187 at entry. After the intervention, 170 were assessed, and 168 at the three-month follow-up. The drop-out rates were low and comparable between the two groups (Ebert et al., 2015).

3.2 SPARX's place within the system of online tools

There are a wide range of tools and resources available online in New Zealand for young people with mental health issues. One of the main gateways to these tools is the index page operated by the mental health foundation. While there is overlap in some of the options available, they have different areas of focus. Some of the areas of difference include:

- Age range: Some are youth specific, while others are designed for adults or do not have a specified target group.
- Access media: Options include web-viewable text resources, websites, videos, interactive experiences, mobile apps and others.
- Requirements for access: Some require referrals, while others are open to all.
- Treatment vs information: SPARX is an evidence based treatment. Some other tools are information resources.

With the diverse issues, tastes and situations present for young people, it is not necessarily an inefficiency to have a range of online tools with similar content in different presentations.

I think having a suite of online tools for a range of conditions of young people is extremely helpful. And I think SPARX certainly has its place in there. I think that with young people you've got to give them a menu of options and what suits one young person will not suit another young person who might have the same symptoms so I think the art of using the online tools is finding the one that works for each different young person at the right time. (National stakeholder)

Appendix Two lists the online tools available to youth. National stakeholders saw SPARX's point of difference as being an evidence based clinical intervention that did not require a referral to access, like some other online tools.

So Brave is for anxiety and SPARX is for depression so they are treating different conditions, but I think having a suite of online tools for a range of conditions of young people is extremely helpful. And I think SPARX certainly has its place in there. (National stakeholder)

However, linking youth and providers to the most appropriate tools is an issue. Given their number and range, there is scope to build on the existing community of practice. Interview participants reported strong interest amongst leading figures responsible for some of the listed tools in strengthening the network linking the providers of each of these resources. Lack of investment in facilitation meant that though there was informal communication and had been successful meetings in the past, the providers of the different resources did not meet regularly.

3.3 Funding and resources

The Ministry of Health provided funding to transition to national, open-access operation. The funding was well suited to the demands of maintaining an existing programme. However, SPARX required development to prepare it for public access. The online environment undergoes rapid and constant change. Developments post-roll out created the need for some necessary upgrades, which have only recently been implemented (for example, the Chrome and Unity fixes) and others will continue to be implemented. For example, NIHI is exploring an app version which may be used on mobile phones, functionality not available in the current version.

NIHI stakeholders reported the transition from limited access academic tool to open-access public tool required more investment of both time and resources than anticipated.

4. SPARX Roll Out

Summary and discussion points

Initial promotion of SPARX focused on health practitioners and their organisations (for example, PHOs, New Zealand School Trustee Association, Mental Health Nurse Conference, youth workers). The SPARX team delivered seminars, training, promotional material online, and email newsletters. Health practitioners participating in the evaluation heard of SPARX from colleagues, at conference events, and through participating in the development process.

The promotion has been effective in raising awareness of SPARX. Results from the Youth Primary Mental Health Service evaluation survey of 317 health providers working in youth primary health found that two-thirds (62%) were aware of SPARX. Awareness was highest amongst nurse practitioners (83%) and those in specific youth mental health roles (82%).

Just over one-third of the 195 health providers who were aware of SPARX (34%), had information cards to give to youth about SPARX and other places youth can go for help with mental health issues.

There has been less focus to date on promoting SPARX directly to young people. The OurSCHOOL survey of more than 3,000 school students completed for the evaluation of the Prime Minister's Youth Mental Health project found 0.9% had contacted or used SPARX in the 12 months prior to the survey.

Young people participating in the evaluation of SPARX found out about SPARX through different means. Nearly half (41%) found it by searching the internet or seeing posters in their schools while two-thirds (59%) heard about it from someone else, generally healthcare providers.

A new communication strategy has been developed to increase the promotion of SPARX to young people now that the IT updates have been implemented.

4.1 Promotion of SPARX to health practitioners

In 2014 to 2015, SPARX promotion focused on health practitioners and their organisations. The decision to put less emphasis on promotion to young people was made pending the implementation of a number of upgrades to the SPARX system. Activities to promote the tool to health practitioners included media interviews, conferences and speeches to youth-focused events, newsletters, emails and publication of studies. The numbers of each type of promotional activity has varied throughout 2015 with presenting at events and conferences being most common (Figure 2).

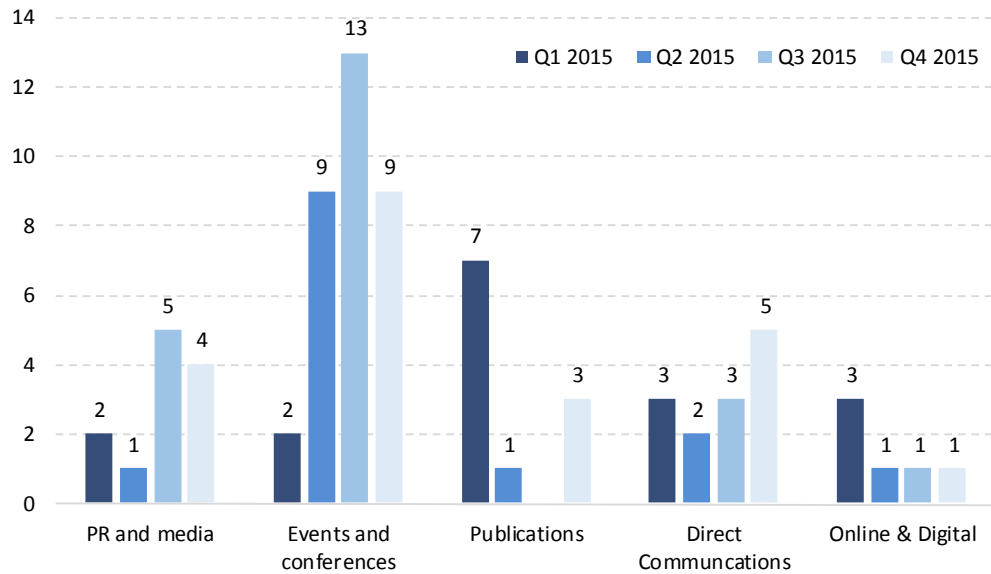


Figure 2. Counts of the promotional activities carried out by the SPARX team in 2015 quarter one to three, January to September (Source: SPARX monitoring reports).

Promotion has been effective in raising awareness of SPARX amongst health practitioners. Results from the Youth Primary Mental Health Service evaluation survey, answered by 317 youth primary health providers found that two-thirds (62%) were aware of SPARX. Awareness was highest amongst nurse practitioners (83%) and those in specific youth mental health roles (82%).

Just over one-third of the 195 health providers who were aware of SPARX (34%), had information cards to give to youth about SPARX and other places youth can go for help with mental health issues. Health providers who used these cards said they were a valuable resource.

I give them one of the little cards, it's better than the pamphlets. I write down when their next appointment to see me is. We have a computer in the waiting room so I suggest they can use that if they want. Youth workers will sometimes go through it with them. If they are on our waiting list the youth workers get in touch with them. (Nurse practitioner)

Health practitioners participating in the evaluation heard of SPARX from colleagues, at conference events, advertisements and independent search. One was told about SPARX by a student they worked with (Figure 3).

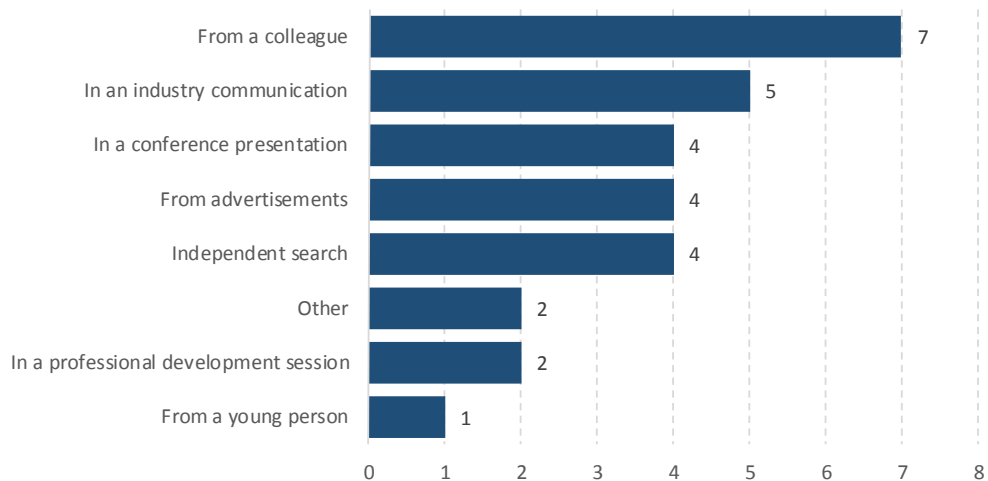


Figure 3. Number of health practitioners who heard about SPARX from different sources (Source: Evaluation survey, n = 33).

4.2 Promotion to young people

While SPARX staff continue to deliver some events promoting SPARX directly to youth, there has been less promotional focus on young people than on health professionals and their organisations. There will be more promotion to young people in 2016 following the implementation of the SPARX update in January 2016.

SPARX monitoring data showed that two-thirds (66%) of youth who registered found SPARX through a health practitioner, family member or friend and the remaining one-third found SPARX independently (for example, seeing SPARX in media or advertising or finding it in a Google search) (Table 3).

Just under half (41%) of young people who completed the evaluation survey found SPARX independently, for example through googling or seeing advertisements. The remaining 59% were referred by a health professional or other person.

Table 3. Source of SPARX referrals based on information young people record when they register on the SPARX website (Source: Data from NIHI December 2015).

SPARX referral source from monitoring data		All registered youth (number) (n = 4,112)	All registered youth (%)	Completed module 1 (number) (n = 1,573)	Completed module 1 (%)
Referral	Mental health professional	1,812	44%	756	46%
	School staff	600	15%	227	14%
	Family or friend	337	8%	123	8%
Advertisement or independent search		758	19%	276	17%
Other		591	14%	264	16%

Some youth who had used SPARX said further promotion would be useful to help other youth access SPARX:

I personally feel that more awareness needs to be spread. It took me a long, long time to tell people about my feelings of depression [and] anxiety as I felt very alone and did not know there were places and people who could help me such as SPARX. (Youth)

The OurSCHOOL survey of more than 3,000 school students completed for the evaluation of the Prime Minister’s Youth Mental Health project found 0.9% had contacted or used SPARX in the 12 months prior to the survey. In comparison, 2.3% had contacted or used Youthline/Lifeline, 1.1% Lifehack and 0.5% Common Ground. In comparing awareness, it is important to note these initiatives were all implemented at different times. Most youth who participated in interviews and focus groups in the six locality studies were aware of Youthline and how to contact them while only very few had heard of SPARX.

The SPARX monitoring reports prepared by NIHI report on website visits, unique visitors and views of the SPARX e-therapy pages (Figure 4). All measures peaked immediately after SPARX’s introduction and subsequent promotion, a period when providers were exploring the site for the first time and there were stories about SPARX in the national media. Numbers of unique visitors and page views then declined in the quarters following.

The number of registered youth users has followed a similar pattern, peaking immediately after SPARX’s introduction before declining towards possible stabilisation in recent quarters. The change in youth registrations over time reflects a reduced emphasis on promoting the tool to young people, in particular in August

2015 as NIHI focused on making technical improvements to SPARX (including a transition to a new information technology provider to host and develop SPARX and enabling access from the popular Chrome browser). A new communication strategy has been developed and will be implemented in early 2016. It is hoped this will lead to increased activity.

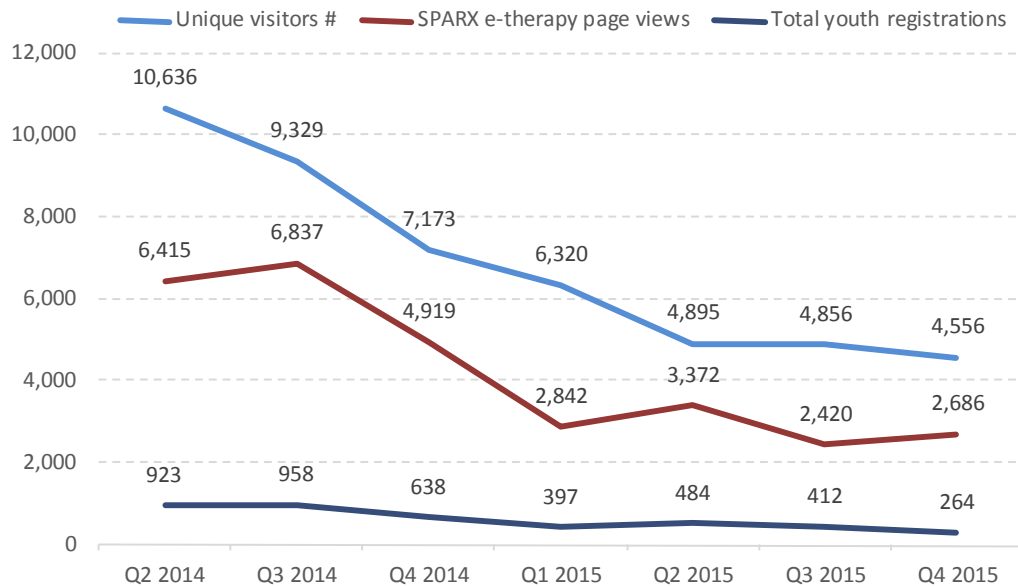


Figure 4. SPARX website visits, unique visitors and e-therapy page views by month (Source: NIHI evaluation report, Oct-Dec 2016).

SPARX is one part of the Prime Minister’s Youth Mental Health projects. Comparing SPARX volumes to youth seen as part of the Youth Primary Mental Health Service provides context for the SPARX volumes (Figure 5). The Youth Primary Mental Health Service also targets youth with mild to moderate conditions. It is important to note that young people may receive support from SPARX and primary mental health services at the same time.

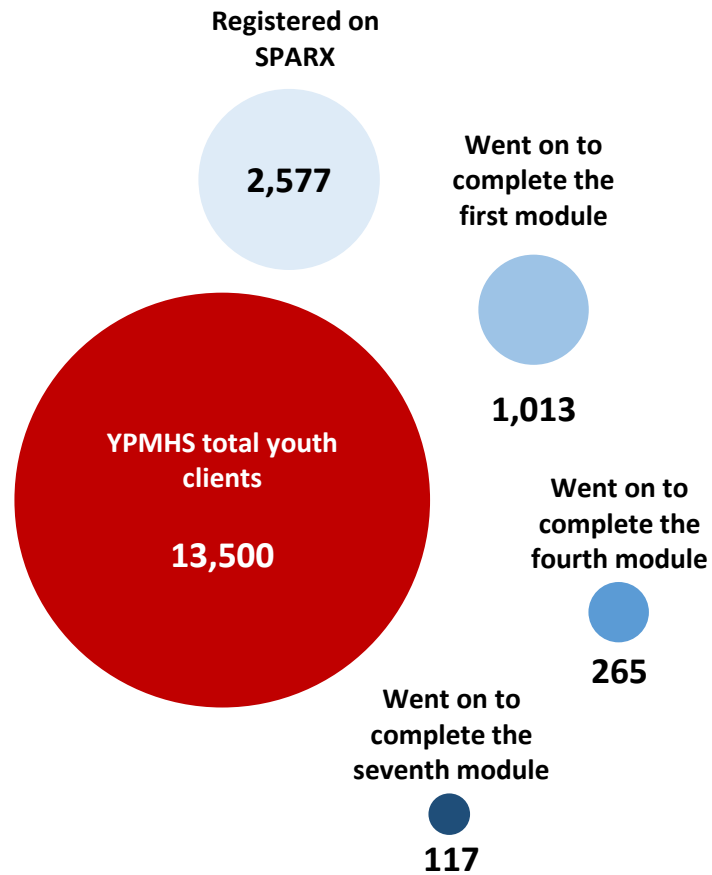


Figure 5. 2014-2015 financial year numbers of youth clients seen by all DHBs as part of the Primary Youth Mental Health Service compared to the number of young people registering with and using SPARX (Source: SPARX monitoring data provided by NIHI, December 2015 and Ministry of Health Youth Primary Mental Health Service data - numbers are rounded and there may be some overlap in clients between quarters if clients had multiple episodes of care).

5. Using SPARX

Summary and discussion points

Monitoring data shows variation in how young people use SPARX. More than half (60%) of young people registered on the site do not complete module one. Of the remainder of registrations, the largest proportion who access SPARX complete the first of the eight modules. Primary health providers interviewed for the evaluation reported that pattern of use is to be expected with a tool targeting young people. They said young people access supports such as SPARX when they feel they are in crisis but may stop accessing them once the crisis passes. However, completing all SPARX modules may allow young people to build resilience and the tools to manage the next crisis, but is more difficult to encourage.

Young people participating in the evaluation reported different frequencies and durations of use. They fell into two main categories: those who used the tool for a short period of time (less than one week) and those who used it regularly for a long period of time (in some cases more than one month).

Most of the young people responding to the evaluation had used SPARX independently in their own time, even where SPARX was suggested to them by a health provider. Young people described wanting a chance to learn without having a health provider or their parents watching. Being able to do something on their own, without creating a perceived burden on their families, was appealing.

Health providers described different approaches to engaging young people with the tool including providing an introduction to SPARX, using SPARX as an engagement and assessment tool, asking young people to complete SPARX modules between sessions as 'homework', working through SPARX with a counsellor or youth worker and delivering SPARX in a group setting.

One of the aims of SPARX in the project planning documents was to also provide health professionals with the opportunity to monitor progress and outcomes online. It was relatively common for health professionals to have recommended SPARX but not followed up about it with the young person.

5.1 Reaching the SPARX target group

SPARX targets young people between the ages of 12 and 19 who are experiencing mild to moderate mental health issues. Analysis of SPARX monitoring data showed more than three-quarters (82%) of the young people who completed at least one of the SPARX modules were inside the targeted age range of 12 and 19 years. Most of the remaining 18% were older than 19 years. The Māori, Pacific and Asian ethnic

groups were under-represented amongst SPARX users compared to the New Zealand population aged 15-19 years (Table 2).

Based on PHQ-A scores recorded following completion of the first SPARX module, more than one-third (35%) of users fell into the targeted severity of mild to moderate (Table 4). A high proportion of users (nearly half, 47%) had moderately severe to severe depression.

Table 4. Severity of depressive symptoms based on the PHQ-A scores recorded by the SPARX system at the end of the first SPARX module (Source: Data provided by NIHI, October 2015).

Severity of depression (note: includes only those who completed at least one module)	Proportion of SPARX users who completed at least one module (n = 2,103)
No or minimal symptoms	13%
Mild depression	16%
Moderate depression	19%
Moderately severe depression	21%
Severe depression	26%
Unknown	5%

Young people with more severe mental health issues as assessed by their answers to quizzes within SPARX (positive to self-harm ideation) are advised to contact other mental health services. Any users who have worsening symptoms, based on their quiz scores, are reviewed by NIHI staff at the end of each quarter.

5.2 Frequency and duration of use

Young people who completed the survey most commonly used SPARX for about a month. Smaller proportions used SPARX for shorter or longer durations: one-third (35%) reporting that they use SPARX for about a week or less, while one-fifth (22%) used SPARX for longer than a month. Young people were not more or less likely to use SPARX for a longer period of time if they found SPARX through someone else (for example, a counsellor or parent) than if they found it themselves.

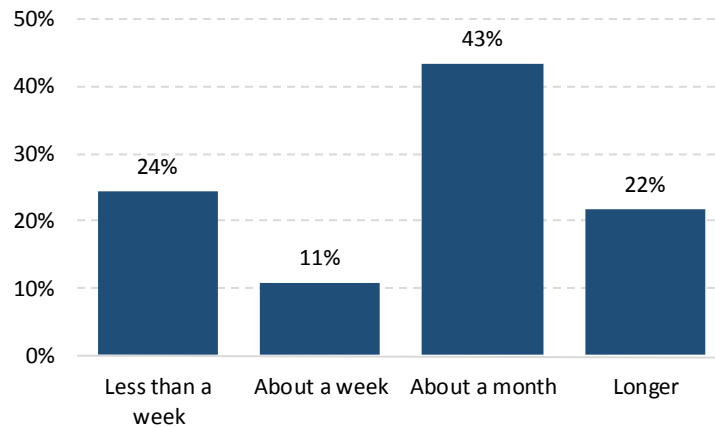


Figure 6. Proportions of young people surveyed for the evaluation who used SPARX for different periods of time (Source: Evaluation survey, n = 37, excludes 12 not sure).

SPARX is designed to be completed at a rate of one to two modules per week with each module taking 20 to 30 minutes to complete. Young people who completed the evaluation survey most commonly reported using SPARX ‘two or three times’ per week (Figure 7). Some young people who completed the survey reported using SPARX more often, completing SPARX in less than one week.

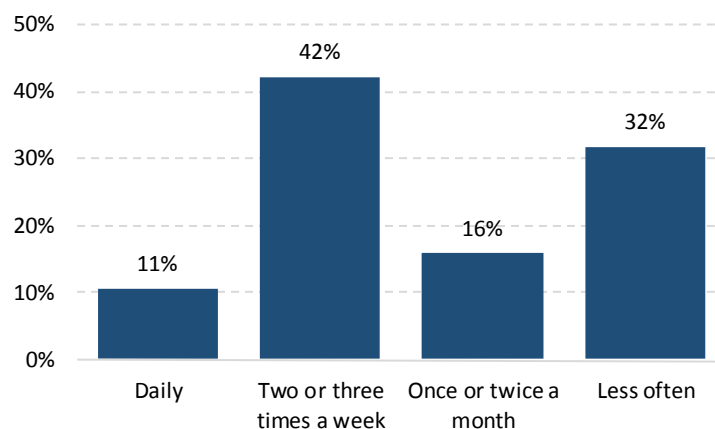


Figure 7. Proportion of young people who used SPARX at different frequencies (Source: Evaluation survey, n = 38, excludes 11 not sure).

The most common patterns of use amongst survey respondents were using SPARX less often than once or twice a month for less than one month, and using SPARX two or three times per week for about a month. A higher proportion of young people who had a high-use pattern (accessing SPARX more often than once or twice a month for a month or longer) reported using SPARX increased their wellbeing (78% compared to 36% of those who used SPARX less frequently and for shorter periods of time).

The SPARX monitoring system records how many modules each young person completes and how long the young person takes to complete each module. Overall, under half (40%) of the young people who register on SPARX complete the first of the seven modules. One-quarter (24%) of those who complete module one go on to complete module four and a smaller proportion (10%) continue to complete all seven modules. Figure 8 shows the proportion of the young people who register who complete one, four or seven of the SPARX modules by date of registration.

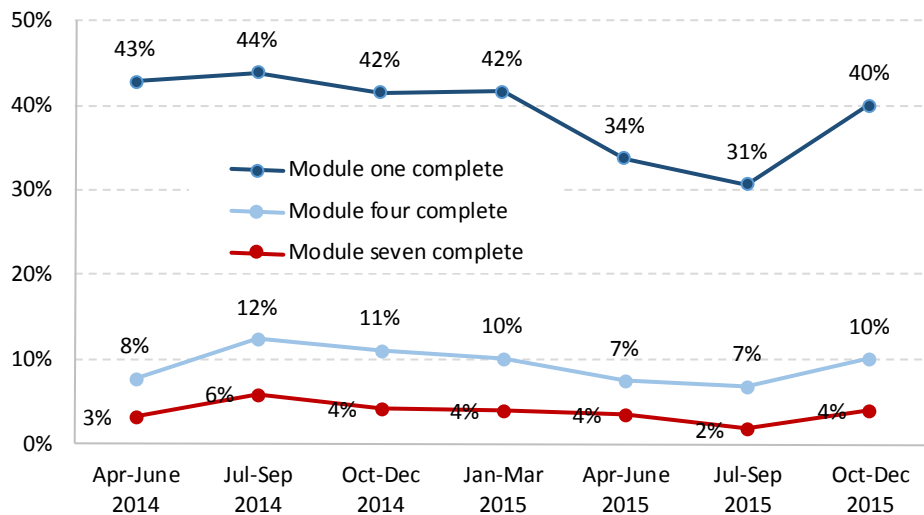


Figure 8. Proportion of the young people who register who go on to complete modules one, four and seven by date of registration (Source: Data provided by NIHI, January 2016).

There has been a recent increase in the proportion of young people completing modules one, four and seven in the most recent quarter (October – December 2015). The total number of registrations decreased in the quarter while the number of e-therapy page views increased (see section 4.2). The apparent increase in adherence rates may be related.

Adherence rates were consistent by referral source with the exception of those referred by school staff. Smaller proportions of young people referred by school staff completed modules four and seven (Table 5). One school health teacher explained introducing youth to SPARX in health classes which is likely to result in many just registering or completing only the first module.

Table 5. Proportion of young people registered with SPARX completing modules one, four and seven of SPARX by referral source (Source: SPARX monitoring data supplied by NIHI, October 2015).

Referral source	Module one completion	Module four completion	Module seven completion
Mental health professional (n = 1,690)	42%	11%	4%
School (n = 587)	38%	5%	2%
Family or friend (n = 318)	37%	11%	4%
Advertisement or independent search (n = 716)	36%	9%	5%
Other (n = 591)	45%	10%	4%

Thirty-two of the young people who responded to the online survey did not complete all of the SPARX modules. Twenty-five of the 32 recorded the reasons they stopped using SPARX (note: young people were able to select more than one option) (Table 6).

Table 6. Reasons given by 25 evaluation survey respondents for not completing all of the SPARX modules.

Number of survey respondents selecting each combination	Reasons given for not completing SPARX (n = 25)			
	Technical difficulties	Didn't need more help	Didn't think SPARX was helping	Didn't like SPARX
7				
7				
3				
2				
1				
1				
1				
1				
Percentage (n=32)	28%	25%	19%	16%

These reasons given for stopping were consistent with those identified by participants who dropped out of the RCT: technical glitches, lack of time, lack of interest, not finding the resource helpful, being physically unwell and unable to attend appointments. In SPARX RCT, young people who completed at least four of the seven modules were included in the comparison group which showed significant improvements when compared to the control group (Merry, 2012)¹².

The reasons for technical difficulties may at least in part be addressed by the introduction of the recent updates (September 2015 and January 2016) that occurred after any of the survey respondents used SPARX.

Some health practitioners thought it was not necessarily a problem that young people tended not to complete all SPARX modules. They commented that young people tended to use their help, or use tools like SPARX, until they felt better. They would ask for help to manage their crisis and move on as soon as the crisis was dealt with. It should therefore be expected that not all young people will want to complete all the SPARX modules.

I think they do it until they get something out of it and they stop doing it. I hope they will go back to it later. (Health practitioner)

I don't think I've had anyone go all the way through. That's not a SPARX issue but that people stop seeing me after a while. Students come and see me when they have a real need and when they are feeling good they don't come and see me. Some understand that they have to keep building those skills because other tough times will come but others haven't reached that realisation. So they just come and see me when they're in crisis. A lot of the work I do is in a short period of time. That's just how young people are designed. (School staff)

It is important to consider the adherence rates for SPARX in the context of adherence rates for other online tools targeting mental health, which are often low. For example, analysis of adherence to the MoodGYM website, an online CBT intervention, in 2006-2007 found adherence rates lower than those of SPARX. Of 82,159 people who registered for the intervention, 59,453 completed the initial questionnaire (72%), 19,304 completed the first module (24%) and 8,275 completed two or more (10%)¹³. The small proportion of users who go on to complete modules

¹² Merry S, Stasiak K, Shepherd M, Frampton C, Fleming T, Lucassen M (2012). The effectiveness of SPARX, a computerised self help intervention for adolescents seeking help for depression: randomised controlled non-inferiority trial, *BMJ* 2012;344:e2598.

¹³ Batterham P, Neil A, Bennett K, Griffiths K, Christensen H (2008). Predictors of adherence among community users of a cognitive behaviour therapy website. *Patient preference adherence*. (2) 97 – 105. Full text available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2770409/>

four and seven of SPARX may not reflect a problem particular to SPARX but may instead be a typical characteristic of youth and/or online interventions.

5.3 Different practitioner approaches to using SPARX

Practitioners' reasons for deciding whether SPARX was an appropriate option for each young person are discussed in Section 7. One of the strengths of SPARX is that it can be used in different ways by young people, depending on their particular situation and need.

Once practitioners decided SPARX was an appropriate tool they adopted different approaches to using it with young people. Health practitioners reported success in using a range of different approaches. The evaluation did not collect evidence to suggest any one approach could be identified as most effective. The table below provides frequencies of the broader categories of different approaches used by practitioners to engage young people with SPARX.

Table 7. Frequencies of different broad approaches to using SPARX recorded in the SPARX interviews with practitioners (n = 15) and SPARX survey (n = 33).

Approaches taken when providers want to get a young person started with SPARX?	Number in interviews	Number in survey
Tell the young person about it verbally <i>I'm usually rushed to get through everything as it is so I don't have time to sit down and go through it with them. (Practitioner)</i>	16	23
Give them information about it (printed material) <i>Generally I'll give them the flyer and I'll tell them it's a programme that has been designed for young people, it gives you practical tools around if you are experiencing anxiety or low mood. (Practitioner)</i>	4	17
Show them SPARX and how to access it <i>I show them SPARX. I just show them how to access it themselves and let them get back to me if they need to. (Practitioner)</i>	8	15
Go through some of the SPARX modules with them <i>For a couple of young people the youth worker sits down with them and does it with the young person in the computer area that works really well. (Practitioner)</i>	4	6

Descriptions of the different approaches as well as their strengths and weaknesses are provided below.

5.3.1. Providing an introduction to SPARX

Some health practitioners acted as a link between young people and SPARX. They introduced SPARX to the young person, often with a description of what it is and what it involves, then provided information about how to access it. SPARX has developed resources to support this including information cards and pamphlets.

For example, one practitioner described their approach:

I might tell them I will give them the name of a website and I think it could be good for you. If you want to have a look at it for me, and then you can tell me what you think about it. Something really simple like that and just leave it. So I just encourage them to look at it on their own. However, I might start to look at it together with them and let them know that I've been on it and what I have experienced. (Health practitioner)

However, asking young people to engage with SPARX, or any other tool and resource, in their own time required a level of motivation practitioners said was not always present. Adopting this approach risked the young person never visiting SPARX, particularly if there was no follow-up from the practitioner.

It was not uncommon for practitioners to comment in interviews that while they had recommended SPARX to young people by providing them with information about how to access it, they had not had any feedback about what the young person thought of SPARX. In some cases, the practitioners only expected to see the young person for a very limited time.

[Is SPARX a successful option?] I think so yes but it's difficult to tell because most of them we only see on a short term basis. It's usually they come in to the ED and then they leave so we don't have a long relationship with them. The number of sessions we get through varies a lot for various reasons. Some it's very few others it's more. ... The main thing they like is that they do find it engaging and it is something they can do by themselves and work on by themselves. That is really positive, it really increases their sense of agency. I have no idea of the uptake for the people I recommend it to sorry. (Health practitioner)

5.3.2. Engagement and assessment tool

Some practitioners reported using SPARX as an introduction to counselling. For the young people SPARX appealed to, the tool served as an interesting and enjoyable introduction.

I use SPARX as a way to engage students for them to be able to see how they are feeling. I'm sure there are lots of other tools or quizzes out there but I use SPARX because it works for me. So it's often an add-on, sometimes an introduction, sometimes a starting point as young people can be really reluctant to see someone. (School staff)

Providers considered SPARX as a non-confrontational way to begin a conversation with young people who were less likely to engage with counselling immediately. Asking a young person to answer questions posed by SPARX, instead of asking them directly, was a way of gaining an understanding of the young person's situation.

SPARX has been useful for identifying kids who might be at risk in the initial questionnaire process they can do online, and also in having them complete the modules with me. It brings up discussion points and gets them thinking about the skills they are building. ... I'm actually using it more and more. ... It's also because of that questionnaire at the beginning. It gives me an indication of how they're feeling. I let them do it and that can be interesting. Usually we start off with a conversation about how things are going. I don't ask how they're feeling unless they've told me. Sometimes when they sit down [and answer the SPARX mood quiz] their answers are different from what they tell me. When I see the results at the end I talk to them about it. It's a starter for a discussion about where they're at this week. (School staff)

5.3.3. Homework between sessions

Some practitioners talked of using SPARX as a 'homework' activity young people could do in between sessions with a counsellor/clinician. SPARX gave the young people something to do in between sessions and served as a starting point for discussion at subsequent sessions.

Yeah, and I know at least one of our clinicians has actually sat down and gone through SPARX with a client as part of their work together, so they included going through a module and then expand on that within the session. And she found that really useful especially being able to expand on the content and applying it to the young lady's context. (Other provider)

Other practitioners gave the young person SPARX as something to do outside of the sessions meaning the practitioner could offer treatment they otherwise would not be able to offer.

Well it's for those times that it might be in-between times of seeing someone else or if they don't want to see anyone, or if they are just not doing so good. The only other one I know is the John Kirwan one and I often recommend that to both young people and adults who come to me with a mental health problem for the first time. I mean GPs only get 15 minutes so we can only cover so much and often they come in with multiple things so we only get to touch on it so I just quickly recommend it. So online tools are useful because you can send them away with something. (Health practitioner)

5.3.4. Guided use with a counsellor or other professional

Some practitioners described working with the young person as they completed all of the SPARX modules. Two approaches were described:

- Being available in a counselling room while the young person worked through SPARX, answering any questions the young person has as they come up. This allowed discussion to begin with a problem the young person faced in SPARX and move on from there.

When I sit the kids down, I have a tiny wee room. I just set the student up at my desk with the computer. I load it up for them and I create the username and the password. I say save it on their phone, or else they forget in the meantime and forget what email address they use. I then sit behind them and let them go through it. A lot of students work through it

and don't want to talk to me but some ask "what do you think I should do next?" I try not to be too involved but just make suggestions. (School staff)

- Sitting side by side with the young person as they work through SPARX, providing guidance and discussion proactively. One practitioner described this approach as valuable because it allowed people not trained in CBT, or the non-clinical workforce to effectively deliver an intervention through SPARX.

When we work through things with them, sometimes young people want to engage with therapy but others find it quite difficult, so we have found it a wonderful tool where the focus is on SPARX and we are doing it together and they find that less threatening than facing the therapist. Like in our team everyone can do the CBT but we also suggest it to colleagues where they might not have the CBT skills but they can still sit alongside them and do it. ... It can be a tool to help engage them in a therapeutic programme. (Mental Health practitioner)

So when the youth workers are sitting alongside the youth doing SPARX they are asking about the decisions made along the way. So I think that works really well. It's great because the youth worker doesn't have to have the CBT skills but they can engage them and support them in doing it. The model and thinking is already there it's just having that person there to kind of back and forth with. (Other provider)

Both of these approaches require the practitioner to have sufficient time for sessions long enough for the young person to engage with SPARX and have discussion with the practitioner. Some roles, for example general practitioners who typically have 10 to 15 minute appointments, do not allow sufficient time to work through SPARX with the young person.

A useful next step when using SPARX in this way was discussing how the learnings in SPARX could be applied to real-world situations the young person had experienced. One practitioner said:

Applying to the real world is the next one. After she's had a session on SPARX, we talk about how does that connect to what happen in the weekend. Take a SPARX scenario, jump into a time machine and go back. What would you do differently if you had the knowledge from SPARX back then? (School staff)

In the literature, Mitchell (2009b, cited in Fleming and Merry, 2013)¹⁴ found "...non-medical health and social services personnel provide considerable mental health care. They preferred supportive, understanding roles over identifying pathology and offering illness-specific referral or treatment." (page 11)

¹⁴ Fleming T, Merry S (2013). Youth work service providers' attitudes towards computerized CBT for adolescents. Behavioural and cognitive psychotherapy 41 (3) 265-279.

This was consistent with a study with youth workers from 40 providers on the potential to use computer-based CBT with adolescents.¹⁵ Many providers of youth work services would like to be involved in computerised CBT and to have it work alongside their other approaches. In interviews and focus groups, several youth workers thought the programme could be offered to all the youth they worked with. Benefits included avoiding stigmatising individuals and ensuring youth who might need help are not missed. Training, being familiar with the programme and evidence behind it, and how to ensure safety were raised as areas for support by youth workers.

5.3.5. Group work approach

Though less common, some of the responding practitioners talked about using SPARX in a group setting. There were two main approaches:

- Using SPARX as a tool to promote resilience in groups of young people without any specific identified mental health issues. For example, one practitioner spoke of a health class teacher in a school introducing SPARX and working through some of the modules with the class.

I think for our kids it works really well. I know that our junior health teacher said she had discovered it and had shown it to her [year] 9s and 10s in class. I think that's good, showing it to them, and they might go use it at home. But I would be uncomfortable for kids using it in a different environment. In a group setting, it depends on the group. A guidance group I was working with yes, but maybe not in the classroom. They might not be truthful because they don't want to expose themselves. You could use it in a guidance group focusing on a particular thing, with guidance and with people in a similar situation. (School staff)

- Using SPARX as a tool in guidance groups with young people who have a shared experience or issue. SPARX could be used to prompt discussion and to give the group structure and focus. As noted in the quote above, practitioners emphasised the need for skilled facilitators in this setting.

The game itself, it's fine as a tool. It's about the skills of the facilitators really. Some of the counselling skills. Picking up what's happening in the group, not just pure facilitation. It's so much under the ground that you have to be really skilled in counselling to recognise that there's something there and work with it. (Other provider)

Developing tools to support the use of SPARX in a group setting with skilled practitioners was one of the suggestions for SPARX's continuing development.

¹⁵ Fleming T, Merry S (2013). Youth work service providers' attitudes towards computerized CBT for adolescents. Behavioural and cognitive psychotherapy 41 (3) 265-279.

5.4 Young people using SPARX independently

Of the young people who participated in the evaluation, 41% found SPARX independent of any health practitioner or other referrer. Both young people from this group, and some of the young people who were introduced to SPARX by a health practitioner, went on to use SPARX independently (i.e. without follow-up from the practitioner).

Young people who used SPARX independently described wanting a chance to learn without having a health provider or their parents watching. Being able to do something on their own, without creating a perceived burden on their families, was appealing.

I think it would be good for other people, it's something that is easy to access and it's a game so heaps of people would be into that, and I think the way its set up for people with problems it probably does help them. It's good because it's something else, you don't have to talk to anyone you know. Its good not having to talk to anybody. (Youth)

Using the thing online - one of the best thing is I don't have to go see someone or tell someone, I can do it whenever and wherever I have the internet and that's quite good. Like if I am travelling I can't see my therapist I can just jump on and just make sure I'm feeling okay. (Youth)

Health providers reported that not all young people were able or willing to work through SPARX independently. They needed the support of a health practitioner to provide access and/or guidance. One practitioner from a deprived area reported:

We had to be alongside facilitating in order to get them to consider the material. In [my area], the more affluent end, [less than half] of homes have internet. [Area nearby], had less... Working through it independently is not for our population. More likely to be collected up by other agencies. We have the at risk population, it's not something they respond to at all. (Other provider)

5.5 Including whānau

In the evaluation survey, more than one-third (36%) of the 33 health practitioners who answered the question reported they include young people's parents, whānau and/or caregivers in the discussion about SPARX. They gave different reasons for doing so:

- **Availability of information for whānau:** Some practitioners reported that SPARX has valuable information for parents and whānau as well as for young people. Introducing SPARX to the parents and whānau was an opportunity to give them the tools to support their young person.

Yes, I do recommend it or suggest people try it. One of the reasons I do recommend it is that when parents or other people want to know about things. SPARX does have good information for parents and family and health professionals, how they can help the young

person. At module 1 here are some things you can do to support them with the tools and skills they developing. And there are lots of tools for how they can talk to the young person. (Mental health practitioner)

- **Ensuring parents were aware of what their young people were doing:** Some practitioners wanted to make sure parents allowed their young people to spend time on the game by informing them of its value.

The get them to encourage the young person to use it. So the parents understood and did not try to stop them just playing another "computer game". (Health practitioner)

[The parents] had to pay for the internet and approve of the programme. (Health practitioner)

5.6 Training and guidance on use

SPARX has resources available on its website for practitioners to download and use. The SPARX monitoring reports show the number of times health practitioners accessed the resource providing information about how to use SPARX with young people. They also record the numbers completing the Goodfellow unit online SPARX training module (Table 8). Use of the resources and online training have been steady since July 2014. Initial peaks are likely associated with activities around the launch of SPARX.

Table 8. Health practitioners' use of SPARX resources and the online Goodfellow unit training¹⁶. Sourced from the NIHI monitoring report (January 2016).

Quarter	Health professional resource document	Goodfellow unit training modules started (and % completed)
Apr – Jun 2014	235	393 (78%)
Jul – Sep 2014	95	150 (83%)
Oct – Dec 2014	55	Not available
Jan – Mar 2015	50	198 (86%)
Apr – Jun 2015	46	245 (76%)
Jul – Sep 2015	64	286 (78%)
Oct – Dec 2015	47	248 (78%)

¹⁶ The Goodfellow Unit offers continuing education services to general practitioners, nurses and other professionals in primary healthcare.
<https://www.fmhs.auckland.ac.nz/en/soph/goodfellow-unit.html>

Nearly half (43%) of the health practitioners responding to the evaluation survey identified self-directed training as the only training they had participated in.

*No, just played it. I probably did look at the resource for professionals when it first came out but I can't really remember. It was fairly straight forward and easy so that stuff like logging on and signing up is no problem. The game play is easy and it's just simple really so to then use it with my work was really easy, I don't think I need additional training to be able to make it work. I think it's more a case of just being aware of it so it is utilised.
(Other provider)*

Three survey respondents had completed the online Goodfellow unit training. Two thought it was useful and one somewhat useful.

*So I heard about it at uni from my lecturer and then went to the lady who created it she did a presentation. That was more of an information evening for parents at school. It was about a year ago now, it showed us a lot about it but from there I rung up SPARX and they sent me out the health professional training thing or whatever, so I've gone through that.
(Health practitioner)*

Practitioners who completed the online survey identified areas of SPARX where they wanted more training (Figure 9). More than half of survey respondents expressed interest in further training in SPARX's effectiveness and how to connect young people with SPARX.

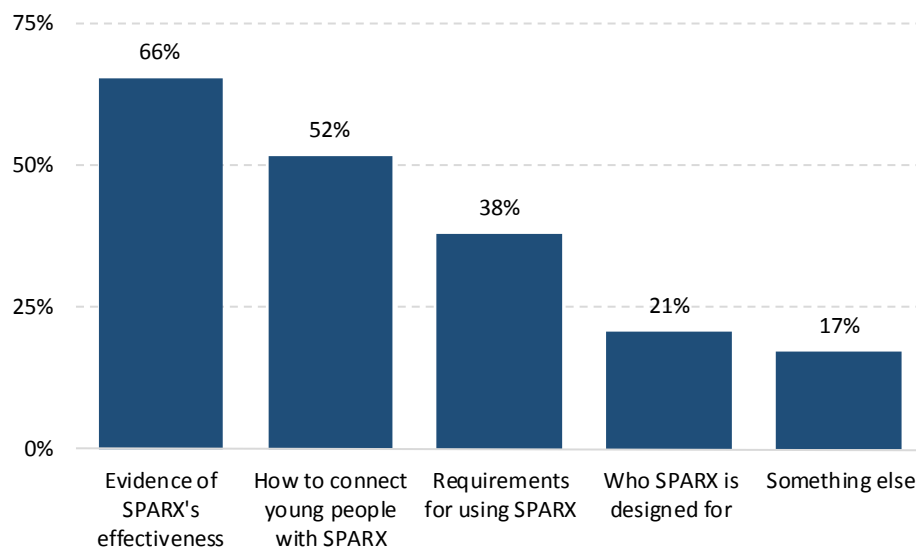


Figure 9. Areas of SPARX that health practitioners wanted more training in (Source: Evaluation survey, n = 29). Note: Respondents could select multiple areas.

Email was by far the most preferred medium for receiving the information, selected by 20 of the 28 who answered the question (71%). Online training (4), in-person training (2), internet resources (1) and conference presentations (1) were preferred by fewer respondents.

6. Effectiveness of SPARX

Summary and discussion points

Young people who participated in the evaluation generally wanted to improve their ability to manage their low mood or anxiety and to address their symptoms.

Overall:

- Approximately half felt that SPARX had helped them improve their wellbeing (54%) and their ability to manage their own wellbeing (62%)
- Nearly three-quarters (72%) felt SPARX was useful and a good option for young people like them.

In their comments, young people discussed the improvements they experienced after using SPARX. They were consistent with descriptions of what young people hoped to achieve after using SPARX.

Young people complete PHQ-A questionnaires at the beginning of their SPARX journey and again after modules four and seven. Monitoring data show that there is an overall trend of improvement in depressive symptoms, especially for those whose symptoms are assessed as more severe in the module one quiz.

6.1 The established evidence base

As noted earlier, the SPARX RCT, conducted by Auckland University, provided evidence that the SPARX programme resulted in a “...clinically significant reduction in depression, anxiety, and hopelessness and an improvement in quality of life”¹⁷.

Adolescents enjoyed SPARX and adherence to the programme was high. The results were seen as more impressive because SPARX as used in that trial was an entirely self-help resource. SPARX was found to be at least as good as treatment as usual (face to face therapy), with the advantage of being less expensive and easier to disseminate. Various studies have examined whether different demographic or socioeconomic factors led to differentials in effectiveness:

- **Ethnicity and gender**¹⁸: “We did not find any differential effect across the different ethnic groups in New Zealand, or for males and females” (page 6)

¹⁷ Merry S, Stasiak K, Shepherd M, Frampton C, Fleming T, Lucassen M (2012). The effectiveness of SPARX, a computerised self help intervention for adolescents seeking help for depression: randomised controlled non-inferiority trial, *BMJ* 2012;344:e2598.

¹⁸ Ibid

noting the small sizes restricted the ability to detect differences between subgroups.

- **Risk level¹⁹**: Two small studies were undertaken with higher-risk groups of youth: those attending Alternative Education (for youth who have been excluded or alienated from mainstream education), and sexual minority youth. In both studies the SPARX computer-based CBT produced results in line with those from the larger scale RCT, but were less definitive due to lower sample sizes and methodological constraints associated with recruitment. Both studies noted that computer-based CBT had strengths, for example at-risk youth could access support when and where suited them. A weakness of the computer-based approach was that youth did not get to experiencing empathetic responses from a therapist, and there were no opportunities for worsening clinical states to be identified. Both studies noted the need to have options to provide a mix of computer and therapist-based treatment.
- **Rural location²⁰**: A focus-group and interview based study in Australia to explore youth views on the suitability of the SPARX programme for rural youth noted the need to control how they access mental health services, and how they protect their privacy in a small community, were paramount.²¹ Being able to access support using a computer-based programme allowed for both control and privacy for youth. Access to internet was raised as a limitation, as some rural areas had poor internet coverage and/or speed.
- **Age²²**: A meta-analysis of RCTs for internet and computer-based CBT therapies for youth with depression and anxiety found that age group “... significantly moderated treatment outcome, with studies aimed at adolescent achieving better results... compared to those studies aimed at children” (page 8).

¹⁹ Lucassen M, Merry S, Hatcher S, Frampton C (2014). Rainbow SPARX: a novel approach to addressing depression in sexual minority youth. *Cognitive and behavioural practice. Cognitive and Behavioural Practice* 22 (2015) 203-216.

²⁰ Cheek C, Bridgman H, Fleming T, Cummings E, Ellis L, Lucassen M, Shepherd M, Skinner T (2014). Views of young people in rural Australia on SPARX, a fantasy world developed for New Zealand youth with depression. *JMIR Serious Games* Volume 2, Issue 1.

²¹ Youth workers used purposive sampling to select participants; objective measures of mood were not used, but most youth said they had felt down in recent weeks.

²² Ebert D, Zarski A-C, Christensen H, Stikkelbroek Y, Cuijpers P, Berking M, Riper H (2015). Internet and computer-based cognitive behavioural therapy for anxiety and depression in youth: a meta-analysis of randomised controlled outcome trials. *PLoS10(3):e0119895* doi:10.1371/journal.pone.0119895.

6.2 Self-reported improvements in well-being and ability to manage

More than half (55%) of the young people who completed the survey agreed or strongly agreed that SPARX had helped improve their wellbeing (Figure 10).

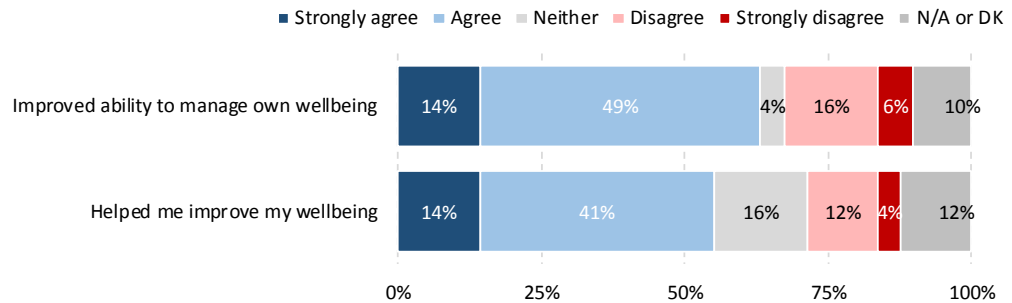


Figure 10. Agreement of young people who used SPARX with statements about the benefits they experienced as a result (Source: Evaluation survey, n = 49).

Young people described the changes in their lives as a result of using SPARX.

Yeah, I definitely do things differently now, I try to just think about things and how I could improve things instead of just stressing out about what's going on, so yeah it's made a big difference. (Youth)

Nearly two-thirds (63%) reported using SPARX had improved their ability to manage their own wellbeing (Figure 10). In interviews, young people discussed how learning about different approaches to managing their depression or anxiety had worked well for them.

[Did SPARX make a difference for you?] Yeah definitely. There were a few of the modules that were particularly helpful. Even the simple things like the breathing one and the calming one and thinking things through. They were really basic but just doing them meant they stuck in my head because it was in a fantastical virtual world. So I remembered it when I needed to apply. (Youth)

Some were able to compare learning about tools and strategies in SPARX to learning about the same tools in interactions with counsellors or in more traditional text resources.

Yeah. I had done counselling before. In counselling I learnt the same things as I learned in SPARX. But I forgot it. Doing SPARX reminded me, I relearnt these things tools and ideas I'd forgotten. The ones that stick with me now were how to deal with anxiety. When I am feeling anxious, going through those exercises helps me calm down. (Youth)

I think it did for me it reminded me of things, like I got homework through counselling and it was like journal writing, meditation, exercises but SPARX really reminded me about the things I enjoy and how I should use those, like I enjoy baking. So it reminded me to go to those things too because when you're in a darker place you don't really think about that stuff. It was really helpful for me to just get those little tips. I think having that little bit of escapism was good, just having things more externally, sorting out how to think and sort

it out in an external environment rather than just have it internalised, that was nice.
(Youth)

For some young people, using SPARX was beneficial in itself, aside from the tools and strategies they learned while using it. Having something enjoyable to do with an element of escapism helped some young people to relax and enjoy themselves. For example, one said:

Really I just wanted to feel better, because this is when I was feeling super low, the lowest I've been. I was also using depression.org and that was being really annoying and crashing all the time. But SPARX worked well and you could just relax when you played it. It wasn't too addictive that I had to go on it all the time but I could just pop on when I remembered.
(Youth)

Twelve of the fourteen young people who disagreed or answered not applicable for whether SPARX had improved their wellbeing stopped using SPARX before completing all the modules. Six had used SPARX for less than one week and four were not sure how long they had used it for.

6.3 Practitioner reports of improvement

Health practitioners provided positive feedback about SPARX's effectiveness for the young people who had engaged with it. Three-quarters (76%) agreed or strongly agreed SPARX contributes to improvements in depressive symptoms (Figure 11).

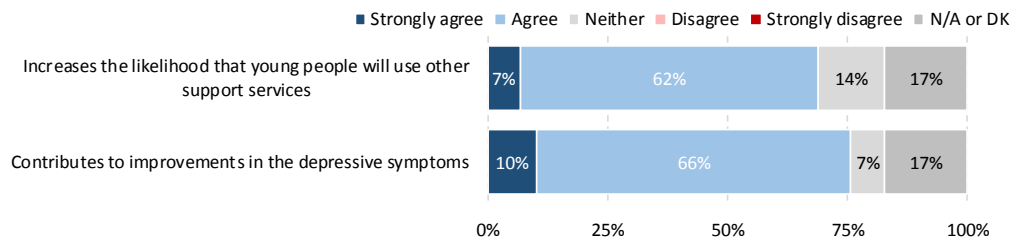


Figure 11. Health practitioners' agreement with statements about whether SPARX was effective in helping young people (Source: Evaluation survey, n = 28).

Practitioners described the feedback they received and some of the changes they had observed in young people's moods:

I have heard from the people who have used it that it has made them feel better, so it's a combination of hearing positive things from people who have used it and the research to back it up as a tool. (Health practitioner)

Improvements in mood as measured by asking them to assess themselves on a scale out of 10 over a series of counselling sessions. (School staff)

The feedback I've heard is that it does make the people who have used it feel better, so that's good. They will say like "yes I felt better, yes I would recommend it to my friends". (Health practitioner)

They felt better immediately. They seemed to gain some hope. It helped them focus on a positive experience instead of things they were worried about. They were happy to give feedback and would recommend to others of their age group. (Other provider)

Practitioners also described improvements in self-awareness, particularly in thinking patterns.

Able to think more clearly about what she has experienced and has begun to apply some of the skills to her life. (School staff)

Just feeling that they could do something that was even distracting and helped them think about their choices. (School staff)

Other practitioners believed the young people they worked with had made improvements but did not feel able to attribute the extent to which the changes were due to SPARX as it had been delivered in conjunction with other interventions.

Absolutely yeah, yeah, I think the format that it's based on gaming, and that it is a self-help tool which is one of the most important ways of improving young people's mental health is to increase resiliency which is them taking control. Of course I can't prove it works for the people I've given it to but I think the idea is perfect. (Mental health practitioner)

They described the reasons for their views, for example:

Yes, everybody who has tried it has thought it was good, they all really like it. So I do get feedback from a lot of students, I don't ask how many sessions they do or anything like that but I do ask if they are still using it and I ask about all the tools I talked to them about. I couldn't point out any changes in the students due to SPARX because I offer such a broad range of things to them so I could never say that a change is due just to SPARX. I mean the young people who use it report that they enjoy using it and they find it helpful, but a change on a particular day in mood could be due to anything so it's hard to say. But the fact that they keep going back shows that it is giving them something. They do say it makes them feel better. (School staff)

None disagreed with either statement, that SPARX led to an improvement in depressive symptoms or increased the likelihood that young people would access other support services. However, one-quarter (25%) and one-third (32%) were unsure or took a neutral stance on SPARX's effectiveness in these two areas respectively. Similar to the sentiment of the second comment above, some respondents were unable to attribute changes to SPARX because it was offered alongside other interventions. Another reason given for neutral and uncertain answers was not having much feedback from young people. For example, one said:

I've had a little bit of people just saying yeah its ok or yeah I had a look at it, that sort of stuff. I'm not sure it's engaging enough for the young people we see. It just limited commitment and an ambivalence about it. One of the things is if they are going off and doing it themselves we are not going to hear about it. (Mental health practitioner)

6.4 Changes in clinical measures

SPARX includes a 'mood quiz' with PHQ-A questions after modules one, four and seven. Comparison of young people's scores at the beginning, middle and end of their time with SPARX provides evidence of improvement in young people's clinical symptoms. A relatively small proportion of the young people who complete the first quiz go on to complete one or both of the subsequent quizzes.

When interpreting the quiz results, it is important to note the adherence rates. One-quarter of SPARX users who complete the first module complete module four and one-tenth complete module seven. Comparisons of results between modules one and four or one and seven relate only to those who completed both of those assessments. It is not possible to determine from the monitoring data whether similar improvements were experienced by young people who only completed modules one, two or three. However, the qualitative feedback from both users and practitioners discussed in the preceding sections suggests benefits even for those who complete only a few modules.

The results reported below focus on young people who completed at least two quizzes, allowing a before and after comparison of symptoms. Most (73%) of the young people who completed the evaluation survey remembered completing the mood quizzes. Almost all (94%) said their answers to the mood quizzes were an accurate reflection of how they were really feeling at the time. Some commented on enjoying the SPARX quiz compared to others:

My parents put me through so many tests on the internet that I despised but I felt comfortable even with the mood assessments on SPARX. (Youth)

A paired samples t-test, comparing module one scores to module seven scores for all young people who completed both modules, showed a significant improvement of 4.3 points (3.3 – 5.3, SD = 7.2, $t(192) = 8.41$, $p < 0.001$) representing a moderate effect size (0.52). Similarly, a paired samples t-test comparing module one to module four scores, showed a significant difference of 2.6 points (2.2 – 3.1, SD = 5.1, $t(435) = 10.75$, $p < 0.001$) representing a moderate effect size (0.46).

6.4.1. Comparison of change in clinical measures between groups

Young people with more severe symptoms, based on their scores at the end of the first SPARX module, showed more improvement than those with less severe symptoms. Severity at completion of module one had a significant effect on the change in score (start to midpoint – $F(4,397) = 10.1$, $p < 0.01$), and start to end – $F(4,170) = 6.8$, $p < 0.01$). Young people with more severe symptoms following module one showed the greatest improvement (Figure 12). Users with no symptoms to mild symptoms may have experienced a floor effect, where it was more difficult to achieve a lower score or an improved score (change of three or more points) because of low initial scores.

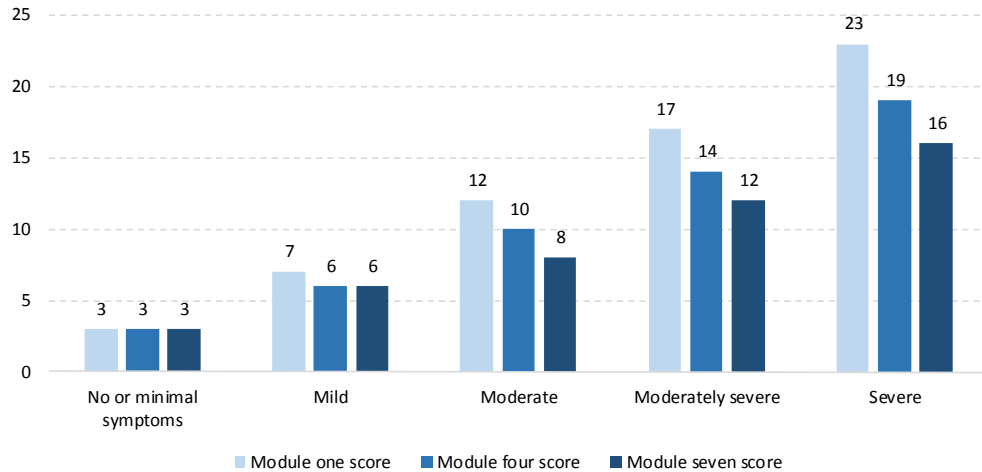


Figure 12. Average scores in PHQ-A assessments for all SPARX users who completed at least module one. Results are grouped by severity of symptoms based on module one PHQ-A scores. Module one n = 1,573, module four n = 380, module seven n = 158 (Source: NIHI data, October 2015).

The chart below shows the change in scores between module one and module four by the severity of module one scores for the young people using SPARX. The proportion of young people whose scores improved was higher for those who had more severe symptoms following module one.

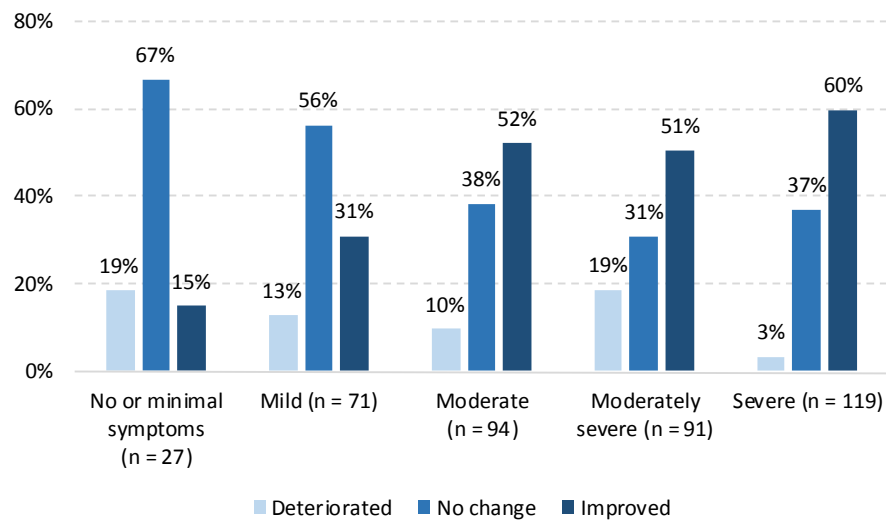


Figure 13. Proportion of young people whose scores improved (decreased by three or more points), deteriorated (increased by three or more points) or remained the same (did not change by three or more points) between modules one and four. Only young people who completed both modules one and four are included. Young people are grouped by severity based on their module one scores (Source: NIHI data, October 2015)

A similar though less clear pattern can be seen between the module one and module seven scores. Higher proportions of those with more severe symptoms after module one improved.

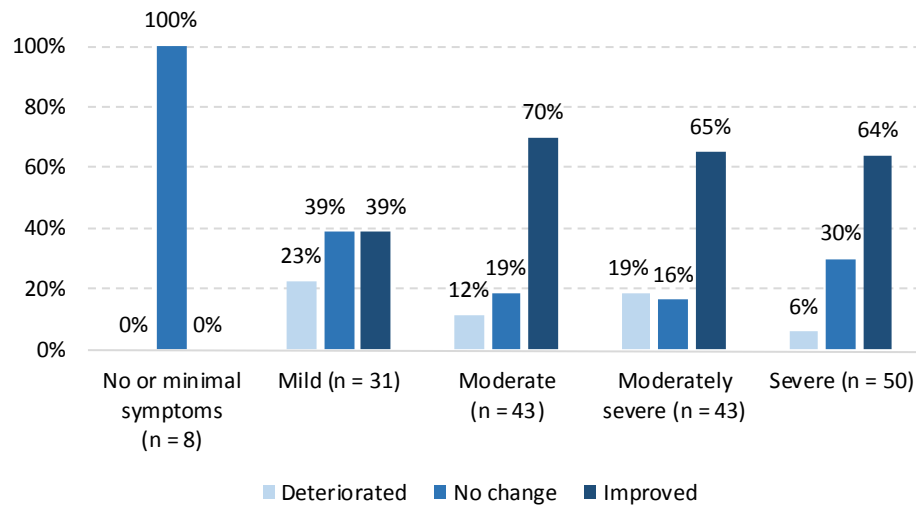


Figure 14. Proportion of young people whose scores improved (decreased by three or more points), deteriorated (increased by three or more points) or remained the same (did not change by three or more points) between modules one and seven. Only young people who completed both modules one and seven are included. Young people are grouped by severity based on their module one scores (Source: NIHI data, October 2015)

The referral source did not have a significant effect on change in scores except for midpoint to end, where there was an average improvement of 1.8 points (0.2 - 3.3) greater for those who were not referred by a school staff member or health professional ($t(180) = -2.258, p = 0.03$).

6.5 Seeking additional help

SPARX facilitates access to other supports in several ways:

- Links to other information and resources and sources of assistance for young people.
- Contact details for youth support services, for example Youthline.
- If a young person’s score on one of the PHQ-A quizzes suggests a high level of acuity, the system encourages them to see a doctor, a school counsellor or an adult that the youth trusts.

More than two-thirds (68%) of the practitioners who responded to the survey agreed or strongly agreed that SPARX increases the likelihood that young people will use other support services (Figure 11).

Half (26 young people, 53%) of the young people who responded went somewhere else for help after using SPARX. Young people reported that they accessed other

online or phone based services (5), counselling or other mental health services (9), school-based support (2) and their general practitioner (2). Eight others did not say.

I think SPARX had some links to other websites so it made me look at other websites then I discovered the Lowdown and other things like that. I think I went to a counsellor at school because of that and I talked to them about it a little. I was already waiting to see a professional so I was in contact with people already though. (Youth)

Some young people discussed SPARX with their counsellors or doctors. It was a useful prompt for discussion.

So yes after doing the quiz it told us to talk to a doctor so we got in touch with our GP and then she recommended a clinical psychologist to see. We did take a printed sheet of the results from the quiz to show the GP and psychologist. And the psychologist was very interested to see his results and talk to [young person] about some of them. (Parent)

Others kept their use of SPARX to themselves, preferring to keep it as something private.

I was already seeing the counsellor at the time but it was just a nice back up for me. No I didn't [talk to them about SPARX], because it was something I could personally do. She helped me in some ways and SPARX was something I could do by myself. It was kind of like my own quest, getting that advice and just backing up what she had said to me and reiterating it. It's nice to have ownership over some things because sometimes it feels like you don't have anything to do yourself. So it was nice to have that for myself. (Youth)

The SPARX monitoring system records how often SPARX users access online resources through the SPARX website. The NIHI monitoring report for quarter 4 2015, reported that in the quarter there were 360 views of the "Get Help Now" page, and 329 views to the "Resources" page.

7. Strengthening the programme

Summary and discussion points

The target group, young people 12 to 19 years old with mild to moderate mental health issues, covers youth with a wide range of profiles and situations. It is inevitable that the tool appeals more to some young people than others. Approximately one in six (16%) of the young people who stopped using SPARX said they did so because they did not like it.

Factors facilitating use by some young people were barriers for others. Practitioners based their decisions on whether, and how, to introduce SPARX on their perception of these factors and views of the young people. Important considerations include:

- Availability of internet access and an internet capable device
- Being able to access SPARX in private
- Age appropriateness - some youth and providers thought SPARX was more suitable for 12 to 14 year olds than older age groups. However, SPARX monitoring data show use of SPARX across the age range and by some older than 19
- Appeal of the game design – Young people and practitioner attitudes to the design of the ‘gaming’ aspect of SPARX influenced use. The game aspect of SPARX appealed to some young people and was what some most liked. However, other young people were unwilling to engage with SPARX because they were not interested in games.

For young people, having something young people could use independently of their parents or other support people (for example, doctors, guidance counsellors) was valuable. The SPARX graphics limited the appeal of the game to some young people, particularly those with expectations set by the standards of high budget studio games, impossible to meet in a public health tool. IT issues and the lack of compatibility of SPARX with Chrome were substantial barriers for users, that are known and being addressed.

In the SPARX monitoring data, there was no significant association between age or gender and the duration and frequency of SPARX use.

7.1 Appropriateness of SPARX for the targeted group

The age group SPARX targets, 12 to 19 year olds, is very diverse. Young people of different ages can be at very different stages in their development. They also have diverse preferences.

SPARX was created by a team of researchers and clinicians including partnerships with Māori researchers, clinicians and software developers. Pacific and Asian advisors also contributed to the tool’s development (University of Auckland, undated).

Health practitioners who responded to the evaluation survey were positive about SPARX’s attractiveness and accessibility for young people (Figure 15). Only a small proportion disagreed that it was easy to access. The four practitioners who disagreed SPARX is easy to access commented on it not working in Chrome (an issue addressed by the SPARX update in January 2016), having technical issues, and the guide looking too Native American rather than Māori.

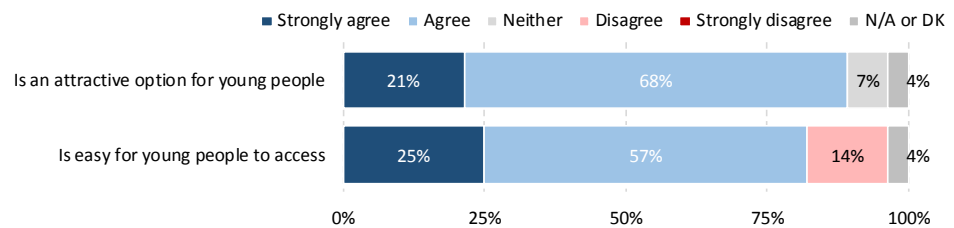


Figure 15. Health practitioners’ views on the attractiveness and accessibility of SPARX (Source: Evaluation survey, n = 29).

Practitioners who saw the game design and online nature of the tool as facilitators viewed SPARX as appropriate for a broader group of young people, particularly in age.

I think it works well for any of those students. I’ve used it mostly with juniors, 10 to 13, but I think it could work equally well with students. It’s just whether it’s the kind of thing they would use, what kind of games they’re into. Even those who don’t like games, it can appeal. Going on a quest, that idea fits counselling. Going on a journey and working through it with a guide. Here it’s on a screen. (School staff)

Practitioners reported that the SPARX content was a good match for the issues young people were facing.

I’m actually using it more and more. Students’ reasons for presenting to me can be quite varied but really the issues are pretty similar in lots of ways. Relationships with peers, their families, maybe a combination, self-esteem, those kinds of things. Negotiating life. I think SPARX has potential for most of my students if it catches their fancy. (School staff)

Most young people were positive that SPARX was both a good option (74%) and useful (74%) for young people like them (Figure 16). Only a small proportion disagreed (10% for both). These five young people reported SPARX just did not appeal to them (2), they did not like the look and feel (1) and it was too hard to use (1). One made no comment.

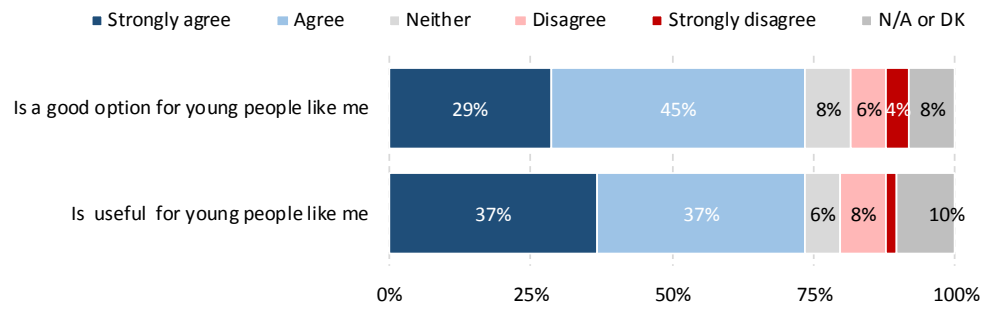


Figure 16. Young people’s agreement that SPARX is useful and a good option for young people like them (Source: Evaluation survey, n = 49).

Health practitioners’ decisions to use SPARX depended on a range of factors closely linked to their views on the barriers and facilitators to using SPARX. They are discussed below, along with related suggestions for improvement made by health practitioners and young people.

7.2 Availability online

Availability online meant young people could use SPARX independently and privately. In the survey, nearly three-quarters of young people (74%) agreed that SPARX was good because it is online.

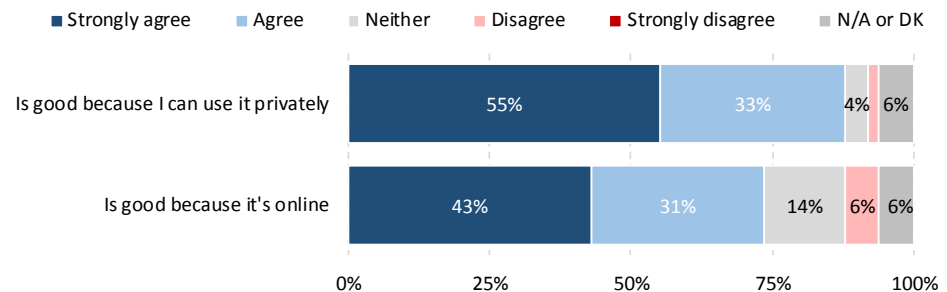


Figure 17. Young people’s agreement with statements that SPARX is good because it is available online and can be used privately (Source: Evaluation survey, n = 42).

The online, self-help nature of SPARX means it can be used in private. An even higher proportion (88%) agreed it was good because they could use it privately.

The virtual environment was like a way to practice without the pressure of someone watching. (Youth)

Privacy removes stigma or perceived stigma to approaching someone for help with mental health issues. Being able to use SPARX independently and in private gave young people a sense of being in control of their own care.

I'm not sure, really. I kind of just started using it because I didn't have to talk to anyone, that's probably the reason everyone gives you but I just didn't want to talk to anyone. I just wanted to do my own thingy. It says you learn the same skills as you do when you do counselling so I'd rather do that. (Youth)

I think I wanted to do it so I could say well no I haven't been to a counsellor but I have learnt the same skills through this. Just to keep [my parents] quiet as well, it was really irritating when they were trying to get me to a counsellor as well. And it was just I really didn't want to go and talk to anyone. (Youth)

However, the online nature of the tool can also be difficult for some young people. Young people with no or limited internet or computer access are not able to use SPARX. It is more likely to be a barrier for vulnerable young people in families that cannot afford home or mobile internet or who live in geographically isolated locations, though access to internet through home computers and/or mobile devices is increasing.

Suggestions for improvement in this area focused on making it possible to use SPARX on a wider range of devices, particularly tablets and mobile phones. Some practitioners commented they wanted it to work on Chromebooks as well, since some school students use Chromebooks for school work. This functionality was added in the January 2016 update.

Some providers and young people reported technical difficulties accessing the game. In the evaluation survey, 28% of the young people who did not complete all modules (n = 32) reported they stopped using SPARX because of technical difficulties. The most common issues mentioned were:

- The game freezing a lot
- Difficulty controlling the character
- Computer equipment struggling with the demands of the game.

A higher proportion of the young people who did not agree SPARX had helped their wellbeing stopped using SPARX because of technical difficulties (39%, compared to 21% who thought SPARX had helped them).

7.3 Motivation to engage independently

Engaging with SPARX requires a level of motivation that might not be present for all young people.

Usually if the young person is fairly mature and they have some internal motivation to get better. Often the brighter students who want to know what's wrong and want to improve their state of wellbeing. (Health practitioner)

SPARX was well suited to young people who did have sufficient motivation to use it because it could be accessed at any time and they could stop and start as often as they liked.

Practitioners suggested more resources or support for the alternate models of using SPARX (such as sitting alongside young people while they work through it or delivering SPARX in a facilitated group setting). Such resources could enable them to deliver SPARX more reliably to young people who lacked the motivation to use the tool themselves.

7.4 Age

Health practitioners had different views on the age range that should be using SPARX. Some felt it was most appropriate for a narrower group of young people, generally at the younger end of the targeted 12 to 19 age group. They often commented the game was relatively basic and less likely to appeal to older youth who were more used to high-budget games. None of the evaluation participants expressed concern about the appropriateness of the content, just whether the presentation suited older youth.

I think it might be better with the 12 to 14 age range with the way it's delivered but if you look past the game side of it the material is still really good for the older people, it doesn't matter what age you are. I have had feedback that some professionals think it's too young, or that some kids are quite sophisticated gamers, so they are dismissive of the basic-ness of it. (Health practitioner)

Age-wise, I've had a lot of feedback from different professionals who think it is more suited for younger people because of the graphic style and simplicity. I'm interested in it particularly for kids who are going to have difficulty transitioning to high school or with change because it lays down a lot of the psychological tools that will help strengthen young people in regards to change in adolescent life. (Mental health practitioner)

Some practitioners offered SPARX to young people from the younger age ranges through to those older than 19. Data collected from users at registration did show higher proportions of the young people using SPARX were in older age groups.

Few of the young people commented specifically on the age-appropriateness of SPARX. As shown in Figure 17, most of the young people who responded to the evaluation survey (representing a range of ages) felt that SPARX was useful and appropriate for young people like them. Where young people did comment, it was usually that they thought SPARX was a little young for them. For example:

I know it's meant for a wide range of ages, but I think I would make it a little harder. It was maybe a little too easy. I think it would make the information stick more. (Youth)

7.5 Game design and graphics

The SPARX design has strong appeal for some young people who find it engaging and enjoyable. Others criticised some aspects of the game, particularly the simplicity and the graphics. Some practitioners described expecting young people who spend a lot of time playing to be more likely to engage with SPARX. However, these young people were used to playing high-budget, studio games with a level of graphics and polish not available in SPARX. Their expectations for game polish were not at a level able to be realistically met by SPARX.

It wasn't what I expected, I was expecting more of a game like Skyrim. So a little more open and more freedom, so I thought you might be able to find your own quests and then it would how you impact the world in a way I guess. It's hard to describe, I'm not really sure. (Youth)

Improving the graphics was a common suggestion even from young people without such high expectations. Some recognised doing so could make it too demanding for some devices and could be very expensive.

I stopped because I didn't like the graphics. If it looked better that would have helped and maybe if it was a little more open as well. (Youth)

The graphics weren't that good but then if they were better it might not run on older computers so I think it was good. (Youth)

Equally the graphics were appealing for some despite their design:

The almost childish, retro video game feel of it and Māori links made it welcoming and enjoyable. (Youth)

Some young people found it difficult to engage with SPARX because they were not interested in games at all, but for others it offered a new perspective.

I felt like I was transported to a whole other world which felt really nice because I had to think about what my character was doing instead of all the other things that made me feel depressed. (Youth)

[SPARX] made it easier to understand thinking patterns, and the multi-choice questions gave ideas on how to manage it. That it was in third persons so puts it into perspective a bit better. (Youth)

It is unlikely there could be any change made to the SPARX game to make it appeal to young people disinterested in the game format. Facilitating these young people's access to other tools and resources is important.

7.6 What young people hoped to achieve from using SPARX

Young people who completed the evaluation survey explained the reasons they began using SPARX. Their responses included two main themes: desire to improve their depression or anxiety and desire to learn new strategies and tools to manage

their depression or anxiety (Table 9). Though the two are closely related, the difference in the two themes highlighted differences in self-awareness.

Table 9. What young people hoped to achieve when they began using SPARX. Note: Some answered both (Source: Evaluation survey of youth, n = 49).

Hoped to achieve:	Number of survey responses	Example comment
Improvements in wellbeing	25	<i>To not be depressed. (Youth)</i> <i>To get out of my depression, or at least get it under control. (Youth)</i> <i>Help with depression and anxiety. (Youth)</i>
Improved ability to manage own wellbeing (acquisition of tools/strategies)	22	<i>Strategies to cope with overwhelming situations and anxiety and depression. (Youth)</i> <i>Something to calm me down and provide advice after already seeing a counsellor. (Youth)</i> <i>A fun game that might help with difficult situations and understand me more. (Youth)</i>

7.7 Other suggestions for improvement

Other suggestions for improvement made by practitioners and/or young people included:

- Simplifying the sign-up process at the start: The sign-up process can be daunting for young people who are already wary sharing information and/or engaging in counselling.

I think it needs to be able to just 'jump on it' type thing, like not have all the sign up stuff just a quick jump on is what you want. And have shorter modules which might be more suited to the waiting room situation where they could do it on an iPad for 15 minutes while they wait. I could use that very easily in my clinic. Just using their waiting time for therapeutic purposes would be good. (Health practitioner)

- Development of additional resources: Develop and distribute additional resources to support alternative approaches to introducing and using SPARX with young people. For example, guidelines for using SPARX in a group setting or introducing it to older youth.

If there is any funding to trial SPARX in a group setting, we would be really interested because we are committed to continuing our [...] programme so if we got funding we would love to put them together. (Health practitioner)

8. Overview and recommendations

The purpose of the evaluation of SPARX is to assess the effectiveness of the roll out of the service, whether the service reaches the target group, the effectiveness of the service for youth, and whether there are any opportunities for improvement. An overview of evaluation findings for the key evaluation questions is provided below.

8.1 Development and roll out of SPARX

SPARX is one of a range of different online sites and tools to support youth mental health. SPARX was developed based on evidence from a randomised controlled trial and received international awards. Work is underway to explore options to expand the operating platforms SPARX uses in partnership with US-based e-therapy company Linked Wellness (University of Auckland, undated).

While evidence from randomised controlled trials is considered a ‘gold standard’, the transition from a small-scale tool in an academic setting to an open-access online tool represents a substantial change.

8.1.1. Roll out

SPARX has been established but development of the tool continues. The main implementation issues have been developing the IT functionality move from a closed, small-scale tool to an open-access public website within the resources available (both budget and personnel).

SPARX continued to be updated and promoted over the course of the evaluation and further development and promotion is planned. For example, a new version with improved functionality in Chrome was launched mid-January 2016, after the evaluation data collection had been completed. The Chrome update is particularly significant because more than one-third of visitors to SPARX used Chrome. NIHI is exploring an app version which may be used on mobile phones: functionality not available in the current version.

8.1.2. Promotion

Promotion of SPARX initially focused on providers rather than young people. Providers have the potential to link young people with SPARX. The SPARX team also delayed some direct promotion to youth until planned development of the IT platform, particularly compatibility with Chrome, was complete.

Following the January 2016 launch of changes to make SPARX more compatible with Chrome, the SPARX team will promote SPARX through school guidance counsellor networks at the start of the 2016 school year. A SPARX training module is provided online through the Goodfellow Unit.

There is reasonably high awareness of SPARX amongst practitioners working with youth (health providers and school pastoral care providers). Two-thirds (62%) of 317 surveyed practitioners working in the youth mental health sector were aware of SPARX. Awareness was highest amongst nurse practitioners (83%) and those in specific youth mental health roles (82%).

Young people participating in the evaluation of SPARX found it in different ways. Nearly half (41%) found it by searching the internet or seeing posters in their schools while two-thirds (59%) heard about it from someone else, including healthcare providers and school staff.

Search terms such as *'help for depression'* and similar produce lists of potential sites. It is likely to be difficult for youth and family/whānau to work out which site to go to. Consistency in how the various tools available are described and presented to young people on SPARX and other online sites would be helpful for people searching the internet by themselves.

A new communication strategy has been developed to increase the promotion of SPARX to young people. It will be important that the strategy considers:

- The range of different places and people where young people could find out about SPARX
- How to reach the diverse group of young people of different ages and vulnerabilities and levels of engagement with providers.

Recommendation 1: Ongoing promotion to providers and young people is required. Communication strategies should include strategies for reaching young people and also the different people and places young people may go for help.

Recommendation 2: Effective promotion is resource intensive. Aligning the promotion of SPARX with the promotion of other online tools and supports for youth mental health could improve cost effectiveness. For example, including SPARX in single point of entry tools and practitioners' electronic guides to care pathways.

8.1.3. Alignment with other online tools

There is strong interest amongst those responsible for other online tools in strengthening the network linking the providers of each of these resources. Strengthening communication could lead to:

- Greater specialisation in individual tools
- Sharing learnings across tools, even where they sit in different organisations
- Greater scope for strategic funding to address gaps in the system of tools available

- A central ‘hub’ that could be used to assist young people or practitioners to identify the most appropriate tools.

Clarity about the aims, target groups, effectiveness and recommended ways to use the different online tools and sites would be beneficial in assessing what is in place and any duplication and gaps. Aligning promotional activity across sites and including links to SPARX in other online sites (and vice versa) has the potential to enhance effectiveness and efficiency.

Recommendation 3: Explore options for enhancing the network of practitioners in leadership roles for existing and new online mental health tools for young people. Given the level of demand on the time of those involved, there may be scope for investing in national level facilitation of such a network.

8.2 Reach

As at the end of December 2015, there were 1,220 providers and 4,116 young people registered on SPARX. The reach and patterns of use may change as SPARX is further developed and promoted.

The OurSCHOOL survey of 3,006 high school students completed for the evaluation of the Prime Minister’s Youth Mental Health project found 0.9% had contacted or used SPARX in the 12 months prior to the survey. In comparison, 2.3% had contacted or used Youthline/Lifeline, 1.1% Lifehack and 0.5% Common Ground. Most young people who participated in interviews and focus groups in the six locality studies were aware of Youthline and how to contact them and a few had heard of SPARX. SPARX is in discussion with Youthline to have a link to SPARX on their website under their GoForward suite of services.

8.2.1. Reaching the target group

Young people need a range of different options for support with mental health issues and SPARX adds to the range of options available. Preliminary results from the OurSCHOOL survey of secondary school youth, and from other studies of youth identify family/whānau and friends as important sources of support for youth. Also important are school guidance counsellors and health professionals, although to a lesser extent. Of note is that 21% of youth in the OurSCHOOL survey said they would not ask for help for mental health issues at school and 13% that they would not ask for help outside of school. SPARX is a potential source of support for those youth who do not want to seek support from others. Youth using SPARX appreciated that it was private and could be used when and where they wanted.

By the end of December 2015, 1,653 (40%) of the 4,116 youth who registered with SPARX had completed module one. Information from interviews suggests that those

who did not complete module one included young people who registered during a health class at school to look at SPARX and young people registering for a quick look.

Of the young people who began using SPARX, nearly one-quarter (24%) went through to the end of module four and 10% went on to complete the final module. Evidence from the literature sets four modules as an important milestone for positive outcomes. However, primary care health providers interviewed for the evaluation reported that completion of as few as one module is to be expected with a tool targeting young people. They said young people access supports such as SPARX when they feel they are in crisis but may stop using them once the crisis passes.

Completing additional SPARX modules may allow young people to build resilience and the tools to manage the next crisis, but is more difficult to encourage. Young people participating in the evaluation said they most often used SPARX for *'about a month'*. In interviews, some described using it for a while, feeling better for a while and forgetting it, then coming back to it later. Most of the young people in the evaluation survey sample reported using SPARX two or three times per week.

My mental health is not going to always be good, and this is one reason why I like SPARX as I can stop and start it when I need it. (Youth)

Most of the young people responding to the evaluation had used SPARX independently in their own time, even where SPARX was suggested to them by a health provider. Young people described wanting a chance to learn without having a health provider or their parents watching. Being able to do something on their own, without creating a perceived burden on their families, was appealing.

8.2.2. How SPARX is used by providers

Providers had different views about the youth they referred to SPARX, reasons for using SPARX and how they linked youth to SPARX. Different approaches were influenced by the different health provider roles.

- Introducing SPARX as a resilience tool: SPARX can be engaging and helps young people develop the tools to manage their own thinking and emotions before crises occur. While many young people do not look for help until they feel they are in crisis, SPARX could be introduced earlier. For example, a health teacher discussed introducing it in a class setting, demonstrating the first module, and encouraging her students to give it a go.
- Giving the young person information about how to access SPARX (for example, an information card, pamphlet or just the web address) and encouraging them to try it out. Providers using SPARX in this way did not generally follow-up with young people to see what had happened as a result.

- Using SPARX as a ‘diagnostic tool’ or ‘conversation starter’ – inviting youth to complete the PHQ-A questions and discussing their responses.
- Active engagement – Using SPARX as an intervention to improve outcomes or to maintain youth who may be on waiting lists to see a specialist provider. Providers might:
 - Work through SPARX with the young person in a one-on-one setting. Some described giving the young person access to a computer and using SPARX as a prompt for discussion.
 - Facilitate a group of young people working through SPARX as a team. Some providers used SPARX as a tool to prompt discussion and to give structures to counselling sessions for groups of young people facing similar issues. Health providers emphasised the need for skilled facilitators in this setting.

Many of the practitioners who recommended SPARX to young people did not actively follow-up about SPARX and did not receive feedback on its effectiveness. However, other practitioners reported positive feedback and most held the view that SPARX was beneficial for the young people who use it.

One of the aims of SPARX in the project planning documents was to also provide health professionals with the opportunity to monitor progress and outcomes online. Of the registered health professionals responding to the user survey and/or interviewed for the evaluation, few had followed up or had the opportunity to follow-up with the young people they suggested use SPARX.

Recommendation 4: Provide further guidance, preferably by email, to practitioners on the evidence supporting SPARX’s effectiveness and best practice in the range of different approaches that can be used to deliver SPARX successfully.

8.3 Effectiveness

Based on SPARX monitoring data and young people’s self-assessments, mental health outcomes improved for many young people after using SPARX. Analysis of clinical measures demonstrates its continued effectiveness, consistent with the evidence base built in its development and backed-up by qualitative data from providers and youth.

8.3.1 Improvements in youth mental health and wellbeing

Young people who participated in the evaluation generally used SPARX because they wanted to improve their ability to manage their low mood or anxiety. Overall:

- Approximately half felt that SPARX had helped them improve their wellbeing (54%) and their ability to manage their own wellbeing (62%)
- Nearly three-quarters (72%) felt SPARX was useful and a good option for young people like them.

In their comments, young people discussed the improvements they experienced after using SPARX. They were consistent with descriptions of what young people hoped to achieve after using SPARX.

Young people complete PHQ-A questionnaires at the beginning of their SPARX journey and again after modules four and seven. Monitoring reports show that there is an overall trend of improvement in depressive symptoms.

Comparing module one scores to module seven scores for all young people who completed both modules, showed a significant improvement. Similarly, a comparison of module one to module four scores showed a significant improvement. Young people with more severe symptoms following module one showed the greatest improvement.

While the SPARX site provides automated recommendations that young people see a provider, there is not active monitoring or intervention with young people who register and have high PHQ-A scores.

8.3.2. Safety

Many of the practitioners who recommended SPARX to young people did not actively follow-up about SPARX with youth they recommended it to and therefore did not receive feedback on its effectiveness. However, other practitioners reported positive feedback and most held the view that SPARX was beneficial for the young people who use it.

Individual providers and providers from different professional groups use SPARX in different ways. There is the potential to improve the effectiveness of SPARX by explaining the different ways it can be used and the strengths and potential risks.

Recommendation 5: SPARX has benefited from extensive clinical oversight and input and has been rigorously reviewed. The option of taking further action to treat young people with severe symptoms was explored in the development of SPARX, and there is no evidence from the evaluation to suggest young people are put at greater risk. However, there may be scope for taking further action when such young people are identified (with the aim of connecting them with more intensive services).

8.4 Contribution to improving equity

Disadvantage, poverty and inequality are contributors to poorer outcomes for health and wellbeing²³. Young Māori are disproportionately affected by mental health issues and have higher rates of suicide than non-Māori²⁴. Analysis of SPARX monitoring data found that Māori, Pacific and Asian people were under-represented amongst SPARX users who completed at least one module compared to the New Zealand population aged 15 to 19. Given the disproportionate rates of mental health issues, if SPARX has the potential to reduce inequality in mental health outcomes it would be necessary to see an increased proportion of young people from disadvantaged groups using SPARX.

However, one of the challenges for online tools is that access may be more difficult for youth in some localities because of poor internet or lack of computers. Analysis of New Zealand's Integrated Administrative Data has demonstrated that in general, geographic location is strongly associated with risk of poor outcomes, with location-based measures such as the New Zealand Deprivation Index (NZDep) and territorial authority area being important predictors of risk, even controlling for other observed characteristics. Youth at risk of poor outcomes tend to be concentrated in specific areas such as the Far North, Kawerau, Opotiki and Wairoa – areas where internet access may be difficult and socio-economic poverty may limit access to computers²⁵.

Despite geographical challenges, it is important that the IT platform and connectivity reach as many young people as possible. The largest numbers of at-risk youth still live in larger urban centres such as Manukau, Waitakere, Hamilton and Christchurch²⁶.

Recommendation 6: The Youth Mental Health Project steering group and the SPARX team consider ways to improve access for disadvantaged youth and those in rural and remote areas. This may be through improved access to the internet and/or a focus on promoting SPARX through schools and youth-specific service providers and helping these organisations to set up access to SPARX.

²³ Fox S, Southwell A, Stafford N, Goodhue R, Jackson D, Smith C (2015). Better Systems, Better Chances: A Review of Research and Practice for Prevention and Early Intervention. Canberra: Australian Research Alliance for Children and Youth (ARACY).

²⁴ Ministry of Health. (2015). Suicide Facts: Deaths and intentional self-harm hospitalisations 2012. Wellington: Ministry of Health.

²⁵ McLeod, K., R. Templeton, C. Ball, S. Tumen, S. Crichton & S. Dixon. (2015, December). *Analytical Paper 15/02 Using Integrated Administrative Data to Identify Youth Who are at Risk of Poor Outcomes as Adults*. <http://www.treasury.govt.nz/publications/research-policy/ap/2015/15-02/ap15-02.pdf>

²⁶ Ibid

8.5 Programme improvement

SPARX is still being implemented and developed. Information from the evaluation is therefore most useful in informing the Ministry about progress, how SPARX is being used, highlighting what is working well and areas where SPARX could potentially be strengthened.

SPARX is an online tool, therefore young people who do not have access to the internet or an internet capable device cannot use SPARX. In this respect SPARX is no different to other online tools.

As an online tool SPARX will inevitably not reach some youth. However, youth frequently access online tools through schools and libraries and through free Wi-Fi such as outside McDonalds. Therefore, it is important that the online platform is compatible with different speeds and types of Wi-Fi, and a range of internet connected devices. IT issues and the lack of compatibility of SPARX with Chrome were substantial barriers for users, that are known and being addressed.

The target group, young people 12 to 19 years old with mild to moderate mental health issues, covers a wide range of situations. It is inevitable that the tool appeals more to some young people than others. Survey data suggests that approximately one in six (16%) of the young people who stopped using SPARX before finishing did so because they did not like it. There was variation in what young people and providers liked and disliked about SPARX. In the SPARX monitoring data, there was no obvious association between age or gender and the duration and frequency of SPARX use.

In survey comments and interviews youth explained what they liked and did not like about SPARX. What some young people liked were the reasons other young people did not like SPARX or stopped using it.

In the SPARX monitoring data, there was no significant association between age or gender and the duration and frequency of SPARX use. In the survey and interviews youth explained what they liked and did not like about SPARX. Young people liked:

- Being able to access SPARX in private
- Having something they could use independent of their parents or other support people (for example, doctors, guidance counsellors).

There were mixed views about:

- Age appropriateness - some youth and providers thought SPARX was more suitable for 12 to 14 year olds than older age groups. However, SPARX monitoring data show use of SPARX across the age range and by some older than 19.
- Appeal of the game design – Young people and practitioner attitudes to the design of the ‘gaming’ aspect of SPARX influenced use. The game aspect of

SPARX appealed to some young people and was the thing some liked about it most. However, other young people were unwilling to engage with it because they were not interested in games.

- The SPARX graphics - limited the appeal of the game to some young people, particularly those with expectations set by the standards of high budget studio games, impossible to meet in a public health tool.

SPARX will never have a budget to enable design and development on a par with the sophisticated computer games many youth play. However, continued review and improvement of the presentation and the gaming feature may enhance its appeal.

Recommendation 7: The SPARX team continue to develop the IT platform for SPARX explore opportunities to resolve design and technical issues that lead to lower adherence.

8.6 Next steps

Although the evaluation aimed to assess the reach of SPARX, as SPARX is still being rolled out the potential reach and outcomes for young people are not known. Future developments might lead to greater reach than is currently the case, and could potentially change the profile of the participant population.

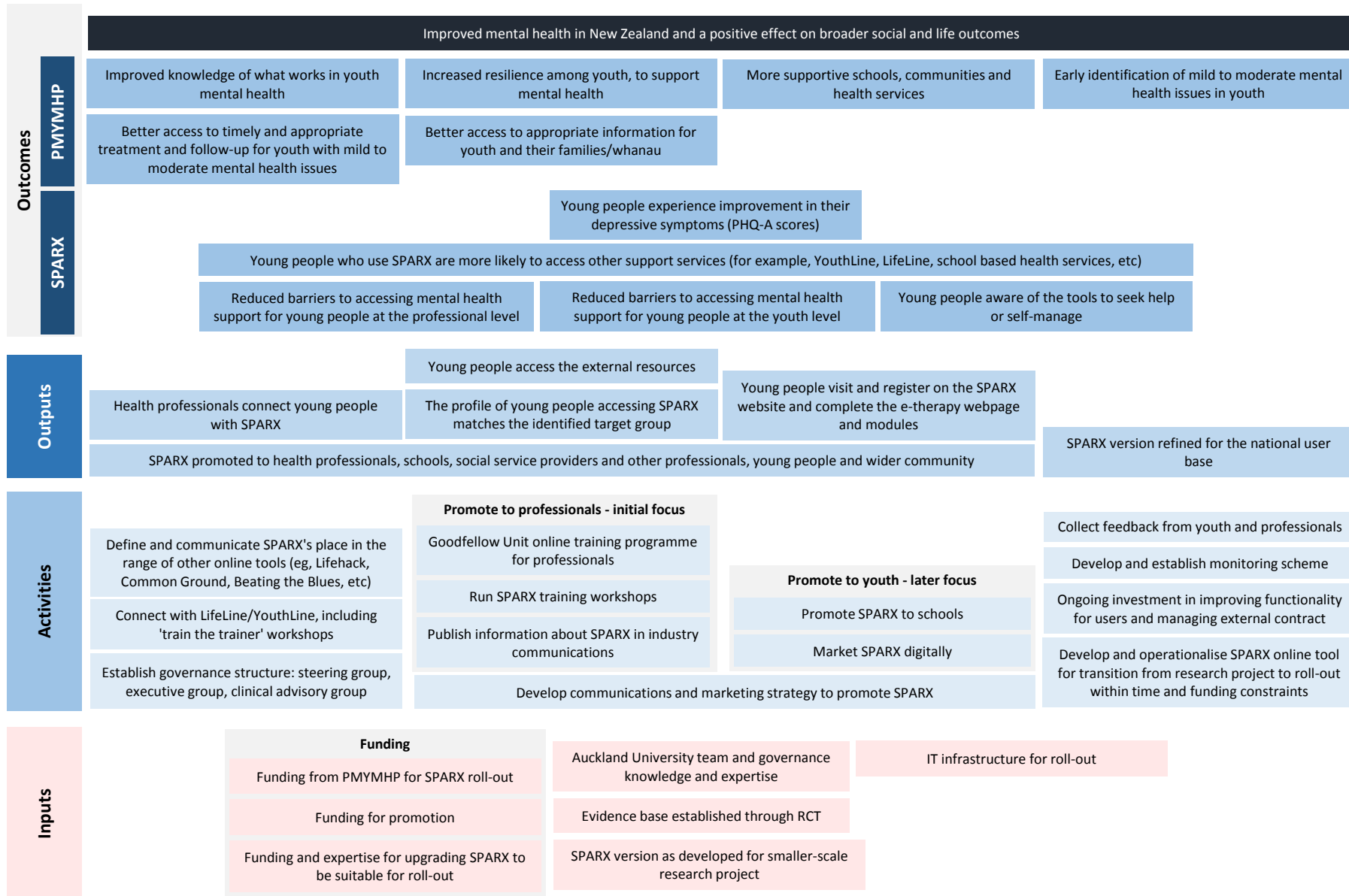
SPARX adds to the range of options for young people wanting support for mental health issues. Evidence in an experimental setting through a RCT and evidence following wider roll out confirm that SPARX is effective in improving outcomes for some of the young people who use it.

A later outcomes focussed evaluation will be important in considering the reach, effectiveness and value for money SPARX offers taking into account the ongoing costs of maintaining SPARX and supporting provider and youth users, and the costs of other ways of supporting young people with mild to moderate conditions. SPARX is included within the economic evaluation of the Prime Minister's Youth Mental Health project that will be completed in mid-2016.

Recommendation: Ongoing monitoring is necessary to track the progress SPARX is making in reaching providers and the target group of youth, and to identify any issues that could be addressed. SPARX monitoring data provides a comprehensive foundation for monitoring but qualitative data to complement the monitoring data would help identify any potential issues and solutions.

Recommendation: Complete an outcomes evaluation when SPARX is fully rolled out and include a value for money component.

Appendix One: Logic model



Appendix Two: Online mental health tools

Non-exhaustive list of the online tools available for youth mental health. Note that some are target adults as well as youth. Primarily sourced from <http://www.mentalhealth.org.nz/get-help/a-z/apps-e-therapy-and-guided-self-help/>

Online tool	What is it?	Target group: age	Target group: severity	Media	Requirements	Affiliation
Online CBT tools						
SPARX	Self-help computer programme (game) using CBT techniques to manage depression	12 to 19 years	Mild to moderate	Website	Free	Prime Minister's Youth Mental Health Project
Beating the Blues	Online CBT – 8 weekly sessions of 50mins	Adults	Mild to moderate depression / anxiety	Website	GP referral required	Developed in UK, available in NZ
Moodgym	Online CBT to prevent and cope with depression and “problem emotions”	Adults	Depression	Website	Free	Australian National University
Online discussion board for people experiencing mental health issues						
Big White Wall	Anonymous online community of people experiencing mental health issues supported by “Wall Guides”	16+ years	Common mental health issues including stress and/or anxiety	Website Android app iPhone app	Free to Auckland DHB residents	UK-based
Tools and coping strategies						
CalmKeeper	Tools to help manage anxiety and panic attacks, developed by clinical psychologists	All ages	Anxiety and/or experiencing panic attacks	iPhone app	\$4.99 in iTunes store	NZ-based

Online tool	What is it?	Target group: age	Target group: severity	Media	Requirements	Affiliation
SAM – Self Help for Anxiety Management	App to understand and manage anxiety	All ages	Anxiety	Android app iPhone app	Free	University of the West of England (Bristol)
This Way Up	Online courses to control anxiety and depression, developed by hospital and university experts	All ages	Anxiety and depression	Website Android app iPhone app	AU\$59/course	St Vincent's Hospital / University of New South Wales
Wellbeing Podcasts	Podcasts to help relax and improve general wellbeing	All ages	General wellbeing	Website iTunes	Free	Mental Health Foundation (UK)
Websites with information for those experiencing mental health issues						
CALM website	Computer Assisted Learning for the Mind. Includes practical techniques for managing stress	University students	Cope with stress / managing life	Website	Free	University of Auckland
thelowdown	Information and tools (including a moderated forum) about depression	Young people	Depression and anxiety	Website	Free	Health Promotion Agency (NZ)
Reachout.com	Website with information and links for youth experiencing a variety of mental health concerns	Young people	mental/ physical health concerns	Website	Free	Australian not-for-profit
Depression.org	Interactive website with focus on self-management – links to The Journal	Adult	Depression	Website	Free	National Depression Initiative (NZ)

Online tool	What is it?	Target group: age	Target group: severity	Media	Requirements	Affiliation
The Journal	Free online programme to learn skills to reduce depression	Adults	Mild to moderate depression	Website	Free	Health Promotion Agency (NZ)
Websites with information for friends and family of those experiencing mental health issues						
Common Ground	Website with information and links for young people and their families	Young people	General mental health issues	Website	Free	NZ-based
Examples of mood diaries²⁷						
Happier app	Way to collect every day “happy moments” and focus on mindfulness	All ages	Low mood	iPhone app Android app	Free	USA-based
Mood diary app	Diary to track mood as well as set up reminders and care plans to support mental health	All ages	Phobias and/or panic attacks	iPhone app	Free	Anxiety New Zealand Trust
MoodPanda App	Diary to track mood as well as connect with other users and/or share moods on social media	All ages	Low mood	Website Android app iPhone app	Free	UK-based

²⁷ Note there are many other similar apps available on Google Play and iTunes.

Online tool	What is it?	Target group: age	Target group: severity	Media	Requirements	Affiliation
Moodscope	Diary to track mood and share with mentors	All ages	Low mood	Web-based app	Moodscope Lite – free, Moodscope Plus – small monthly fee	Based on scales developed by the American Psychological Association
My Happy Place	Mood management tool to focus on positive emotions	All ages	Low mood	iPhone app	US\$1.49 from iTunes	UK-based