Using Technology to Provide Support to Children and Youth in Challenging Contexts

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Prepared by:
Emily Zinck

Advisory Committee Members:
Patrick J. McGrath
Judi Fairholm
Maria Luisa Contursi
Christopher Mushquash
Alison Forshner
Michael Ungar
The views expressed in this report are those of the authors and do not necessarily represent those of the Government of Canada.

For further information or to obtain a paper copy of the report, please contact: cycc@dal.ca.

CYCC Network
School of Social Work
6420 Coburg Road
PO Box 15000
Halifax, NS B3H 4R2

The report should be cited as follows:

Knowledge Synthesis Research Assistant:
Emily Zinck

Co-Leads:
Patrick J. McGrath
IWK Health Centre and Capital District Health Authority
Judi Fairholm
Canadian Red Cross

Members:
Maria Luisa Contursi
Mindyourmind
Christopher Mushquash
Lakehead University
Alison Forshner
CYCC Network
Michael Ungar
CYCC Network and Resilience Research Centre
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- Isabelle LeVert-Chiasson, WUSC
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Contents

Executive Summary ......................................................................................................................1
I. Background to the Knowledge Synthesis Reports .................................................................1
II. The Goal of the Knowledge Synthesis Reports ..................................................................2
III. The Development of the Reports ....................................................................................2
IV. Six Overarching Principles from the Reports .................................................................3

Section 1: Introduction .................................................................................................................4
I. Using Technology to Provide Support to Children and Youth in Challenging Contexts ..........4
II. The Knowledge Synthesis Report on Technology ............................................................4
III. Children and Youth in Challenging Contexts ....................................................................5
IV. Organization of this Report ..............................................................................................5

Section 2: Methodology ...............................................................................................................7
I. Key Terms ............................................................................................................................7
II. Core Concepts .....................................................................................................................8
   a. Evidence-informed Practice, Practice-based Evidence, and Local Knowledge ................8
   b. Best Practices ..............................................................................................................11
   c. Resilience .....................................................................................................................13
III. Methods ..........................................................................................................................15
   a. Scoping Review of the Literature ..............................................................................15
   b. Scan of Network Partners’ Services, Programs, and Connections .........................16
   c. Meetings with Practitioners, Service Providers, and Researchers .........................17
   d. Youth Workshops .....................................................................................................18
   e. Knowledge Mobilization Simulation .......................................................................18
   f. Analyzing the Information .....................................................................................19
IV. Limitations .........................................................................................................................19

Section 3: Technology & Children and Youth in Challenging Contexts ..........................................21
I. Introduction ..........................................................................................................................21
II. Focus ..................................................................................................................................21
   a. Health ..........................................................................................................................21
   b. Violence .........................................................................................................................22
III. Inclusion/Exclusion ............................................................................................................22
IV. Population Groups .............................................................................................................22
   a. Children & Youth Affected by War .........................................................................25
      i. Child Soldiers ..........................................................................................................25
      ii. Children & Youth in Military Families .................................................................25
   b. Refugee Children & Youth ......................................................................................26
   c. Children & Youth Affected by Natural Disasters ....................................................26
   d. Immigrant Children & Youth ...................................................................................27
   e. Children & Youth Subject to Maltreatment .............................................................28
   f. Children & Youth in Alternative Care ....................................................................29
      i. Children & Youth in Institutions .......................................................................30
List of Figures

Figure 1: Circle of Evidence p.12
Figure 2: Seven Tensions of Resilience p.14
Figure 3: Ecological Model for Understanding Violence p.23
Figure 4: Immigrants in Nova Scotia by Category, 2010 p.27
Executive Summary

I. Background to the Knowledge Synthesis Reports

Children and youth in challenging contexts, both in Canada and overseas, face common threats to their mental health that can be better addressed when researchers, service providers, practitioners and communities pool their knowledge, resources and lessons learned of what works best for improving young peoples’ mental health. If these groups continue to work within their occupational and disciplinary boundaries, they will fail to mobilize the full potential of evidence documented by researchers, the practice-related knowledge of service providers and practitioners, and the local knowledge of communities. The CYCC Network was developed in response to this need and in the summer of 2013, released three thematic knowledge synthesis reports: violence, technology, and youth engagement.

Violence against children and youth, in particular, is a complex public health problem that affects communities worldwide, and can lead to potentially devastating consequences for young people and their families if left unaddressed. To tackle this problem, a coordinated effort to share and document best practices for addressing young peoples’ mental health needs is urgently needed. Without opportunities to share this knowledge, there is a risk of delivering potentially ineffective interventions that are difficult for young people and their families to access or relate to. Additionally, poorly-researched or evaluated interventions often ignore the structural barriers (e.g. access to mental health practitioners, stigma, narrow focus on a single problem, and the coordination of mental health services offered by different service providers) that shape young peoples’ mental health and wellbeing. In light of these challenges, the knowledge synthesis report on violence explores the effective strategies that help children and youth in challenging contexts who have been exposed to violence, in order to help them overcome trauma and feel safe in their families, schools, and communities.

Recent years have seen an explosion of new, innovative programs that focus on improving the lives of vulnerable young people through the use of technology. The internet has opened doors of opportunity to reach these children and youth in more effective ways with the information and support they need to lead healthy lives. Today, mobile phones are one of the most prolific mediums through which interventions can be delivered. While the rapid developments made in technology present many opportunities, the expansion of this field has not been mirrored in the development of research and evaluation of those innovations. There is a need for more evidence to support the use of technology as a means of intervention with children and youth in challenging contexts. In response to this gap, the knowledge synthesis report on technology reviews innovations in technology that are known to be effective in helping children and youth in the most challenging of contexts, to nurture resilience, prevent mental health problems, and build a special place for themselves in the collective life of their communities.

Finally, there has been an increasing recognition that youth engagement is central to any best practice or intervention that involves young people. Valuing youth engagement puts the focus on the positive contribution that youth make to programs and their effectiveness.
Programs and services that acknowledge the independence and agency of at-risk youth provide opportunity for young people to give feedback on the relevance and appropriateness of the programs that serve them. Additionally, youth engagement can promote a sense of empowerment on an individual level, and facilitate healthy connections between young people and their community. Despite these benefits, however, there remains a gap in our understanding of the implications of engaging vulnerable youth. In order to better understand and optimize youth engagement, different strategies need to be explored that identify their appropriateness for youth living in different challenging contexts, representing all genders and age categories. With these gaps in mind, the knowledge synthesis report on youth engagement explores strategies that have been shown to work in engaging children and youth in challenging contexts as full members of their communities and in ending feelings of disempowerment and abandonment.

Ultimately, the three knowledge synthesis reports are interconnected in ways that can help to form a comprehensive strategy for researchers, practitioners, service providers, and communities to address the needs of vulnerable children and youth in Canada and overseas. For example, lessons learned from the violence report can inform programs and interventions that use technology to address the mental health needs of young people in challenging contexts. Similarly, the many innovative examples and lessons learned highlighted in the technology report may be used to inform professionals working with children and youth exposed to violence, through the design and delivery of technology-based programming that is safe, accessible and effective for youth in different contexts. In turn, the youth engagement report showcases important work that can be used to inform both the violence and technology reports with best practices for engaging youth in the design and implementation of programs so that interventions are relevant, meaningful and effective to children and youth in challenging contexts.

II. The Goal of the Knowledge Synthesis Reports

In synthesizing evidence from researchers, practitioners, service providers, and communities in the key areas of violence exposure, technology and youth engagement, these knowledge synthesis reports bring together disciplinarily-specific approaches and lessons learned in working with vulnerable and at-risk children and youth. The goal of the Network is to create an integrated and sustainable community of researchers, practitioners, communities, policy makers, and young people working together to share and improve programs that support the wellbeing and positive mental health of children and youth in challenging contexts.

III. The Development of the Reports

These reports benefited from the valuable expertise, feedback, and insight of Network partners from Canada and around the world. An Advisory Committee, comprised of academics, practitioners, and service providers working in the areas of violence exposure, child and youth mental health, youth engagement, and technology, provided guidance and assistance throughout the research and writing process. Parts of the reports, particularly the recommendations, were developed in collaboration with and peer-reviewed by partners of the
IV. Six Overarching Principles from the Reports

The following key principles reflect some of the overarching themes and lessons learned that emerged from the violence, technology and youth engagement knowledge synthesis reports. These principles have been incorporated as actionable items in the Recommendations section of each report. The principles and recommendations are addressed to professionals who work with vulnerable children and youth; including researchers, service providers, practitioners, and policy makers.

1. Engage youth: Youth engagement is critical to the success of any program or intervention with vulnerable and at-risk young people. Practitioners and service providers must initiate youth participation as a step towards engaging young people in their program design and implementation.

2. Evaluate innovative or promising practices: More evaluations are needed to support promising programs/interventions to help develop better mental health outcomes for children and youth in challenging contexts. We recommend that these be embedded within each projects’ structure.

3. Consider culture & context: Design and deliver research and programs with context and culture in mind. Not all methods will be appropriate for all children and youth.

4. Adopt a strengths-based approach: Continue building on the strengths and assets of children and youth, including those of their families and communities. These resources are key to supporting good mental health outcomes and resilience.

5. Assess your practices for potential harm: Take precautions to ensure that the work you are doing is ethical and does not cause more harm than good.

6. Share knowledge with others: Researchers, practitioners and service providers must collaborate to create sustainable structures to document, format, share, and access best practices related to treating young people after violence exposure, using technology to deliver mental health interventions, and engaging youth.
Section 1: Introduction

I. Using Technology to Provide Support to Children and Youth in Challenging Contexts

Recent years have seen an explosion of new, innovative programs using technology to target the mental health of at-risk young people. Innovations in mental health technologies have not only changed the way that young people engage with the healthcare system, but also how they receive information in order to lead healthy lives. Today, mobile phones are one of the most prolific mediums through which interventions can be carried for at-risk young people (Mobile4Good | OneWorld, n.d.). While the rapid developments made in technology present many opportunities, the expansion of this field has not been mirrored in the development of research and evaluation of those innovations. There is a need for more evidence to support the use of technology as a means of intervention with children and youth in challenging contexts.

II. The Knowledge Synthesis Report on Technology

The purpose of this report is to explore how different innovations in technology are used to help children and youth in the most challenging of contexts nurture resilience, prevent mental health problems and build a special place for themselves in the collective life of their communities. Through the lenses of health care delivery and violence prevention, strategies, and interventions will be discussed, as well as gaps in current service provision. Research on the effectiveness of programs for children and youth in challenging contexts has increased significantly, though what we know is helpful remains largely seated within different professional disciplines (Chalmers, 2005; Shlonsky, Noonan, Littell, & Montgomery, 2011). This means that best practices and good programming around the world are not being shared across borders or disciplines. In failing to address this issue, the effectiveness of sharing evidence-informed practices documented by researchers, practice-based knowledge gained by service providers, and the local knowledge within communities is limited. Our purpose here is to show that vulnerable and at-risk children and youth face common threats to their mental health and safety that can be more effectively addressed when multiple formal and informal service providers and community supports become involved in interventions.

Effective strategies that are appropriate to the challenging contexts in which young people live can be identified and shared effectively when space is created for dialogue. This knowledge synthesis of best practices is one of three. Combined, their purpose is twofold:

1. To synthesize evidence, practice, and local-based knowledge in the area of programs and interventions with children and youth in challenging contexts. These reports will contribute to this synthesis of knowledge by presenting best and promising practices for promoting young people’s mental health and safety.
2. To develop peer-reviewed recommendations that will become the basis for a number of strategies by the CYCC Network to share the reports and get their results integrated into policy and practice.

III. **Children and Youth in Challenging Contexts**

Consultations were held with organizations and individuals involved with the CYCC Network to decide what populations of children and youth to include. The following groups are discussed in more detail in Section III:

- Children and youth affected by war
  - Child soldiers
  - Children and youth in military families
- Refugee children and youth
- Children and youth affected by natural disasters
- Immigrant children and youth
- Children and youth subject to maltreatment
- Children and youth in alternative care
  - Children and youth in institutions
  - Youth in juvenile detention
- Aboriginal children and youth
- Homeless children and youth
- Youth gangs
- Child labourers
  - Children and youth in the workplace
  - Children and youth who have been trafficked
- Children and youth living with health-related challenges
  - Children and youth living with chronic illness
  - Children and youth living with mental illness

IV. **Organization of this Report**

In Section 2, the methodology for this report is outlined and the key terms used in the report are defined. This is followed by the core concepts, including the different forms of knowledge, best practices, and resilience. The steps taken to research this report are presented, including the scoping review of the literature, services scan, meeting with professionals, and analysis of the information. The section concludes with an outline of limitations of the report.

Section 3 anchors the discussion of technology and how it can be used to deliver programs and interventions that address health and violence prevention. This discussion provides a robust argument for the benefit of technology to young people who are able to utilize it to receive support and to have a voice. The populations of children and youth included in this report are discussed, giving more detail about some of the challenging contexts facing young people around the world.
There has been increased attention paid to the potential of using technology as a means of service delivery on a wide range of issues. In **Section 4**, a scan of programs and interventions offered to children and youth in challenging contexts is presented. It begins with a discussion of how technology is used to deliver programs and interventions, and presents different types of interventions that have been carried out. Examples of programs are provided, and are presented in a summary table at the end of this section.

Recent years have seen an explosion of new, innovative programs using technology to reach at-risk young people. However, with this explosion, the effectiveness of some of these new technologies is in question. **Section 5** highlights the gaps in research and practice and points to future areas of collaboration and study. The proliferation of mobile phones in Africa, for example, has provided a far-reaching platform for various intervention programs, supports, and initiatives. In the midst of this wave of development, there is an obvious lack of evidence to support the effectiveness of these technologies (Barak & Grohol, 2011; Roberto et al., 2007).

Finally, **Section 6** presents a comprehensive list of recommendations for the effective use of technology for delivering interventions and programs. This section provides some practical tips for using technology with children and youth in challenging contexts as well as some innovative next steps for moving ahead.
Section 2: Methodology

In this section, the key terms used in the report are defined and core concepts presented including, how to understand the different types of knowledge, best practices, and resilience. The steps that were taken to prepare this report are outlined in more detail. These included a scoping review of the literature, services scan, and meetings with service providers, researchers, and health practitioners. The section concludes with a discussion of the limitations of the report.

I. Key Terms

**Best practice:** Interventions that incorporate evidence-informed practice, identify and employ the right combination of program elements to ensure targeted outcomes, and match these interventions to the local needs and assets of communities. *See page 11 for the core concept.*

**Children and youth:** *Children* are defined as persons 14 years of age and under, and *youth*¹ as persons who are between 15 and 24 years of age (UNESCO, 2012).

**Evidence-informed practice:** The integration of experience, judgement and expertise with the best available external evidence from systematic research (Chalmers, 2005, p. 229; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996, p. 71). *See page 8 for the core concept.*

**Local knowledge:** Understanding and wisdom that are used in everyday situations. Its main value lies in helping local people cope with day-to-day challenges, detecting early warning signals of change, and knowing how to respond to challenges. Local knowledge is seldom documented and is mostly tacit (Fabricius, Scholes, & Cundill, 2006, p. 168). *See page 9 for the core concept.*

**Practice-based evidence:** Knowledge that has emerged and evolved primarily on the basis of practical experience, rather than from empirical research (Mitchell, 2011, p. 208). *See page 9 for the core concept.*

**Resilience:** In the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social, cultural, and physical resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provided and experienced in culturally meaningful ways (Ungar, 2008, p. 225). *See page 13 for the core concept.*

¹ Within the category of youth, however, it is important to keep in mind the need to differentiate between an adolescent (aged between 13-19 years) and young adults (aged between 20-24 years), “since the sociological, psychological and health problems they face may differ” (UNESCO, 2012).
Technology: Innovations in electronic media that have been used with children and youth in challenging contexts to help prevent violence and promote well-being.

Violence: The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation (Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002, p. 5).

Youth Engagement: The meaningful and sustained involvement of a young person in an activity focusing outside the self. Full engagement consists of a cognitive component, an affective component, and a behavioural component, also known as “Head, heart, and Feet” [and spirit] (Centres of Excellence for Children’s Well-Being: Youth Engagement).

II. Core Concepts

a. Evidence-informed Practice, Practice-based Evidence, and Local Knowledge

Different types of knowledge are challenging to synthesize, as they continue to be divided along disciplinary and geographic lines. Advocates of evidence-based practice, for instance, prioritize “the use of treatments for which there is sufficiently persuasive evidence to support their effectiveness in attaining the desired outcomes” (Roberts & Yeager, 2004, p. 5). Based on the assumption that empirical, research-based evidence is the most reliable for practice (Proctor & Rosen, 2006), this evidence is generally categorized hierarchically in accordance with the scientific strength of derived outcomes, with meta-analyses or replicated randomized controlled trials ranking among the most authoritative evidence and case studies, while descriptive reports and other unsystematic observations rank among the weakest (Roberts & Yeager, 2004, p. 6). Qualitative evidence in particular is typically given little weight among the advocates of evidence-based practice, who “tend to equate research with quantitative research” and prioritize the results of experimental designs as the “gold standard” (Oktay & Park-Lee, 2004, p. 706).

Traditional approaches to evidence-based practice, however, have been criticized for advancing a top-down approach to practice that excludes the expertise of practitioners and neglects the particular circumstances of service users (Chalmers, 2005; Shlonsky et al., 2011). They argue instead in favour of evidence-informed practice (EIP), due to the reality that “judgments will always be needed about how to use the evidence derived from evaluative research,” thereby taking into account needs, resources, priorities, preferences, and other factors (Chalmers, 2003, p. 36). Evidence-informed practice “better conveys that decisions are guided or informed by evidence rather than based solely upon it” (Shlonsky et al., 2011, p. 363). EIP reflects the integration of best evidence, context, and the circumstances of service providers and users. This definition ranks and prioritizes the outcomes of interventions according to their scientific strength, yet acknowledges that the evidence derived from research will ultimately be subject to the judgment of practitioners (Chalmers, 2005, p. 230).

This inclusive definition also facilitates the integration of other forms of evidence and knowledge, most notably practice-based evidence and local knowledge. As opposed to “the
hierarchy of knowledge which situates research evidence in a position superior to other forms of knowing” (Fox, 2003, p. 82), **practice-based evidence** incorporates the knowledge and experience gained by individual practitioners from various contexts and disciplines, the inputs of which are contributing to a growing toolbox of practice-based strategies (Roberts & Yeager, 2004, p. 12). In recognizing the role of the practitioner in generating knowledge, it acknowledges that “practitioners’ perceptions of the utility of evidence will depend on [the evidence’s] relevance to a particular setting and its validity for that setting” (Fox, 2003, p. 83). Practice-based evidence incorporates a greater focus on the context of interventions and the processes through which they unfold (Barkham & Mellor-Clark, 2003). Moreover, without the bindings of research, these practices often involve new and innovative approaches to high-risk populations, enabling them to keep pace with rapidly changing population needs. For this report, practice-based evidence is defined as, “knowledge that has emerged and evolved primarily on the basis of practical experience rather than from empirical research” (P. F. Mitchell, 2011, p. 208).

This definition enables a shift in focus beyond the outcome-driven perspective of evidence-informed practice, thereby giving voice to practitioners from a ground-up perspective and acknowledging the contingent conditions and characteristics that have facilitated program success.

Interest in **local knowledge** has also gained prominence in recent years (Agrawal, 1995, p. 413; Agrawal, 2002, p. 288). Early definitions of local or traditional knowledge highlighted the communal, relational, timeless, and contextual nature of this form of knowing, situating it in contrast to the individualist, objective, finite, and universal tenets of Western or knowledge (Agrawal, 1995, p. 418). This dichotomy, however, was later criticized for advancing a static concept of traditional knowledge that failed to acknowledge the innumerable cross-cultural linkages that have transpired over the centuries or the considerable heterogeneity encapsulated within this term, including significant differences among philosophies and knowledge commonly viewed as local (Agrawal, 1995, p. 421). Local knowledge is rarely static or untouched by other forms of knowledge, rather it is “undergo[ing] constant modifications as the needs of communities change” (Agrawal, 1995, p. 429; UNESCO, 2003). For the purposes of this report, it is defined as follows:

Local knowledge is used in everyday situations. Its main value lies in helping local people cope with day-to-day challenges, detecting early warning signals of change, and knowing how to respond to challenges... Local knowledge is seldom documented and is mostly tacit (Fabricius et al., 2006, p. 168).

This definition of local knowledge highlights its dynamic and fluid nature, its connections to the physical and social environments of specific communities, and the social, political, and kinship structures that reinforce individual and collective well-being. A sub-set of local knowledge is traditional knowledge which, in this report, refers to the knowledge held by Aboriginal people. In the Canadian context, this refers to the First Nations, Métis and Inuit peoples. Traditional knowledge “builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change” (Government of Canada, Canadian Environmental Assessment Agency, 2004). Traditional knowledge is a unique form of
local knowledge which is needed to inform effective programs and interventions. Despite the growing evidence base underlying each of the above forms of knowledge, researchers and practitioners working with children and youth in challenging contexts have largely adhered to a single body of knowledge. These divides exist both within and across research, practice, and local knowledge. The “substantial deficits” of evidence-informed practice, in particular, have received considerable attention in the literature (Mitchell, 2011, p. 215). Most notably, despite the multiple and complex mental health needs facing many children and youth in real-world service settings, most clinical efficacy trials have instead concentrated on preventing or treating single disorders, to the point that research in this field has largely developed into several independent lines of work (Mitchell, 2011, p. 208). Therefore it is unclear whether the results from one study of children and youth may be generalized to another (Cohen, Berliner, & Mannarino, 2000, p. 31).

Evidence-informed practice further provides little analysis of the core elements, mechanisms, and contexts that underlie the implementation of successful interventions. Among randomized controlled trials, in particular, controlling for the characteristics, needs and contexts of the intervention and targeted population has left a considerable gap between the intervention assessed and the application of that intervention in other settings (Bower, 2003, p. 331; Shlonsky et al., 2011, p. 366). Consequently, although researchers may be able to point to the efficacy of cognitive behavioural therapy, for example, the specific components contingent to its success or its replication in another setting remain largely unknown (Nikulina et al., 2008, p. 1238). While necessary, the evidence derived from efficacy trials has been deemed insufficient to guide practice and policy in a clinical setting (Barkham & Mellor-Clark, 2003, p. 320; Bower, 2003, p. 332).

Although practice-based evidence can help fill these gaps by providing valuable insights into the core elements underlying certain interventions, much of this knowledge “remains tacit and undocumented” (Mitchell, 2011, p. 208). Practice wisdom accumulated through the personal experiences of practitioners or knowledge disseminated through communities of practice are rarely articulated, such that the decisions underlying service provision remain largely unknown. Moreover, as indicated above, evaluations conducted by practitioners are subject to variable scientific rigour and may be susceptible to bias in their application (Bonnefoy, Morgan, Kelly, Butt, & Bergman, 2007, pp. 33–34). Nonetheless, practitioners have often denounced the “authoritarianism” of research, arguing that it is typically elevated above the expertise of service providers or the needs of their clients (Fox, 2003, p. 82; Shlonsky et al., 2011, p. 362).

Similar concerns exist regarding the conceptualization and use of local knowledge. The variation inherent across contexts, cultures, and different ways of knowing has made understanding how interventions are implemented and accepted at the local level complex (Baum, MacDougall, & Smith, 2006, p. 855). A further divide remains between Western measures of mental health that prioritize the absence of disease or disorder and the more holistic interpretations of mental health found in many non-Western cultures, which typically focus on the mental, physical, social, and spiritual measures of “wellness” (Durie, 2004, p. 1141). However, many researchers are reluctant to engage the “ethical space” needed to forge cross-cultural conceptions of mental health or continue to locate forms of local knowing within traditional hierarchies of evidence and effectiveness (Cochran et al., 2008, p. 19; Durie, 2004, p.
Considerable gaps continue to prevail between research, practice, and local knowledge and point to the need for more collaboration between academics, practitioners, and policy makers.

### b. Best Practices

These reports use examples of evidence-informed practice, practice-based evidence, and local knowledge to provide a unique understanding of effective or “best” practices in programs for children and youth in challenging contexts. Best practices, as described by the World Health Organization,

> ...should be made on the basis of their fitness for purpose and their connectedness to research questions, not on the basis of a priori notions about the superiority of particular types of evidence or method or placement in an evidence hierarchy, e.g. that the randomized trial is the only basis for knowledge generation (Bonnefoy et al., 2007, p. 30).

In incorporating a wide range of methodologies, this integrative approach avoids the danger of underestimating the relevant evidence available by allowing for the insights and strengths offered through each form of knowledge, all of which can be usefully combined to contribute to the overall understanding of the efficacy and effectiveness of interventions (Booth, 2001; Oliver et al., 2005, p. 429). It also moves away from ranking or assessing evidence based on its research design, and instead matches different forms of evidence with their appropriate research questions (Bonnefoy et al., 2007, p. 99; Glasziou, Vandebroucke, & Chalmers, 2004, p. 39).

This approach promises to reconcile the tension dividing these forms of knowledge by positioning researchers, practitioners, and local communities as both knowledge generators and knowledge receptors. Evidence-informed practice, for instance, may be most usefully thought of as considering questions of “what is delivered” and ultimately “what works best,” thereby prioritizing the outcomes derived from empirical evidence. Practice-based evidence, in contrast, tends to focus more on questions of “how does this work,” and is based on the notion that successful interventions are comprised of several “active ingredients” and program elements that can be identified and employed (Mitchell, 2011, p. 212; Walker, 2003, p. 152). Local knowledge adds further complexity to the latter, asking “what works for whom in what circumstances.” Each of forms of analysis provides specific answers that are dependent on the research question at hand (Glasziou et al., 2004, p. 39).

These types of knowledge may be usefully conceptualized as residing within a circle of evidence (see Figure 1). The purpose of the diagram is to demonstrate how much knowledge exists within each category. In other words, there is an incredible amount of local knowledge. Local knowledge is located in the outer ring, the widest part of the circle, representing the diffuse and varying forms of knowing intrinsic to the environments in which children and youth reside. Practice-based evidence is located in the middle ring of this diagram, addressing a wider variety of questions and variables exploring the elements that comprise successful interventions. Evidence-informed practice is located in the centre of the circle, as the scope of these studies is typically narrowed to a population, intervention, and outcome. Scientific rigor
increases towards the centre of the circle, culminating with meta-analyses and randomized controlled trials. As a result of their almost exclusive focus on the effects of specific interventions, these are found at the circle’s centre.

In turn, community ownership increases towards the outer perimeter of the circle, as interventions are matched to the unique needs and customs of communities. However, our understanding of the fluidity among these forms of analysis and the resultant balance between scientific rigor and community ownership remains limited. In the diagram, the gaps between the types of knowledge represent the intersections of these forms of knowing that have not yet been fully explored.

**Figure 1: Circle of Evidence**

Best practices emerge within the synthesis of these different types of knowledge. So for the purposes of this report, the term is defined in the following way:

Best practices are interventions that incorporate evidence-informed practice, identify, and employ the right combination of program elements to ensure targeted outcomes, and match these interventions to the local needs and assets of communities. They incorporate evidence-informed practice, identify and employ the right combination of program elements to ensure targeted outcomes, and match these interventions to the local needs and assets of communities.

This definition prioritizes the evidence garnered from researchers, practitioners, and local knowledge, depending on the question being asked. It will also be applied in relation to the
interventions and programs that aim to support and nurture resilience among children and youth in various challenging contexts.

c. Resilience

Although resilience is generally recognized as the capacity of individuals to bounce back from adversity by adapting a sense of well-being (Turner, 2001, p. 441), the study of resilience over time has led to changes in how it is defined and conceptualized. Early research paid specific attention to the individual characteristics associated with positive outcomes of well-being, focusing specifically on the risk and protective factors associated with an individual’s ability to cope in challenging circumstances. Risk factors are defined as “a measurable characteristic in a group of individuals or their situation that predicts negative outcome on a specific criteria,” and are used to suggest which populations have an elevated probability of negative adaptation (Wright & Masten, 2005, pp. 19–20). As these factors “rarely occur in isolation,” children and youth most highly at risk are those who have been subject to multiple adversities, the effects of which tend to accumulate over time (Wright & Masten, 2005, p. 20). Risk factors derive from the personal traits of the victim or perpetrator, his or her family or peers, the school or community, or the larger society. At the same time, various protective factors may enhance the capacity of children and youth to cope with their exposure to violence.

Defined as the “quality of a person or context or their interaction that predicts better outcomes, particularly in situations of risk or adversity,” protective factors help shield individuals from the effects of adversity and promote positive adaptation (Wright & Masten, 2005, p. 19). Depending on where a variable resides on the spectrum of risk and protective factors, it may produce either poor or positive adaptation (Wright & Masten, 2005, p. 23).

The first wave of resilience, however, has been criticized for oversimplifying the often complex reality of children and youth in adversity (Boyden & Mann, 2005; Ungar, 2005). The second wave of resilience research expanded to address larger contextual concerns, focusing most notably on the individual’s interaction with his or her environment and the developmental pathways and trajectories leading to resilience (Mafile’o & Api, 2009; Ungar & Liebenberg, 2011; Ungar et al., 2007, p. 287). Within this broader ecological perspective, resilience is seen to encompass the qualities of both the individual and the individual’s environment, which provides the material and social resources necessary for their positive development (Boyden & Mann, 2005, p. 10; Ungar & Liebenberg, 2011). This approach further acknowledges a culturally embedded understanding of resilience that prioritizes the individual’s capacity to overcome adversity in culturally relevant ways and highlights the diverse values, beliefs, and everyday practices that are associated with coping across populations (Boyden & Mann, 2005, p. 10; Ungar et al., 2007, p. 288). These culturally embedded conceptions of positive development challenge traditional Western definitions of resilience, coping, and healthy functioning by opening the door to the various pathways to successful adaptation that may be associated with non-Western populations and cultures.

Adopting this ecological and culturally sensitive perspective, this report defines resilience as follows:

In the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social, cultural, and physical
resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provided and experienced in culturally meaningful ways (Ungar, 2008, p. 225).

Central to this definition are the interactions between an individual’s personal assets and his or her environment, which together produce the processes needed to help overcome adversity (Liebenberg, Ungar, & Vijver, 2011, p. 219). Michael Ungar et al., identify seven tensions that resilient children and youth must typically navigate and resolve in accordance with the resources available to them individually and within their families, communities and cultures: access to material resources, relationships, identity, power and control, cultural adherence, social justice and cohesion (see Figure 2) (2007, p. 295).

**Figure 2: Seven Tensions of Resilience**

<table>
<thead>
<tr>
<th>Tensions</th>
<th>Explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Access to material resources</td>
<td>Availability of financial, educational, medical and employment assistance/opportunities; access to food, clothing and shelter</td>
</tr>
<tr>
<td>2. Relationships</td>
<td>Relationships with significant others, peers and adults within one’s family and community</td>
</tr>
<tr>
<td>3. Identity</td>
<td>Personal and collective sense of purpose, self-appraisal of strengths and weaknesses, aspirations, beliefs and values, including spiritual and religious identification</td>
</tr>
<tr>
<td>4. Power and control</td>
<td>Experiences of caring for one’s self and others; the ability to affect change in social and physical environment in order to access health resources</td>
</tr>
<tr>
<td>5. Cultural adherence</td>
<td>Adherence to local and/or global cultural practices, values and beliefs</td>
</tr>
<tr>
<td>6. Social justice</td>
<td>Experiences related to finding a meaningful role in community and social equality</td>
</tr>
<tr>
<td>7. Cohesion</td>
<td>Balancing personal interests with a sense of responsibility to the greater good; feeling a part of something larger than one’s self socially and spiritually</td>
</tr>
</tbody>
</table>

Importantly, this perspective suggests that “no one way of resolving these tensions is better than another,” highlighting the uniqueness across individuals (Ungar et al., 2007, p. 294). It instead prioritizes the issue of resources and the ability of the child or youth to make the most out of what is available. It further suggests that in order to experience well-being, resilient children and youth also need families and communities willing and able to support resilience (Ungar, 2008, p. 221). Resilience in this sense is context-dependent, requiring an understanding of the physical and social ecology in which the resources necessary to nurture resilience are found.
In adopting this framework, this report employs these components of resilience to assess the mental health and social outcomes of the interventions and programs addressed in the following chapters, with a goal of identifying the best practices that help generate:

A state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (World Health Organization, 2001).

In this sense, mental health is the basis for well-being and effective functioning in ways that are validated and appreciated by the communities in which children and youth reside (Hermann, Saxena, Moodie, & Walker, 2005, p. 2). The interactions between an individual’s personal assets and his or her environment produce the processes needed to help overcome adversity (Liebenberg et al., 2011, p. 219). Best practices for achieving positive outcomes will support these interactions.

III. Methods

This section outlines the steps taken in preparing these reports. The first step was a scoping review of the literature. The second step involved a services scan conducted with the CYCC network partners. This scan provided details about different programs and interventions that the network partners are using. The third step was a series of meetings with partners and contacts, gathering more information about strategies and programs that work with children and youth in challenging contexts. The information gathered from these three steps has been synthesized and presented in the following sections. All of the methods used in this report were guided by the following question: What strategies have been shown to be successful in engaging children and youth in challenging contexts as full members of their communities and ending feelings of disempowerment and abandonment? In order to address this question, this report was guided by the following sub-questions:

- What interventions are currently being employed among children and youth in various challenging contexts and which have been shown to work?
- What lessons have been learned?
- Where are the overlaps in research and practice? Where are the gaps?
- Where are the opportunities for future collaboration in research and practice?

a. Scoping Review of the Literature

This report employs a new framework for knowledge synthesis in order to draw upon the findings of different types of research designs and knowledge that use quantitative and/or qualitative data. It begins with a comprehensive overview of the literature in order to assess the field in terms of volume, nature, and characteristics of the research done to date (Arksey & O’malley, 2005, p. 30). This framework corresponds with that of a scoping review, defined as:

The rapid mapping of the key concepts underpinning a research area and the main sources and types of evidence available, which can be undertaken as stand-alone
projects in their own right, especially where an area is complex or has not been reviewed comprehensively before (Mays, Roberts, & Popay, 2001, p. 194).

The purpose of scoping the field of literature was to be as comprehensive as possible in finding common understandings of what helps children and adolescents overcome violence, promote engagement, and use technology in ways that help them to cope with risk exposure and to promote and sustain their mental health. Although lacking depth, this exercise helped to identify and describe the major approaches and schools of thought to date, while assessing the wealth of evidence that currently exists regarding children and youth in challenging contexts. Some of the search terms used were: civic, politic*, social engagement, activism, and citizenship. The full list of search terms used for this report can be found in Appendix A.

The scoping review was limited to literature demonstrating evidence-informed practice, practice-based evidence, and/or local knowledge. This includes studies demonstrating meta-analytic or meta-ethnographic findings, randomized controlled trials, participatory action research, and community development. Findings from both peer-reviewed journals and grey literature\(^2\) are included. The latter has been particularly useful in capturing new and innovative strategies and interventions that have not yet been addressed in peer-reviewed academic literature. All sources that pre-date 2000 were excluded from this report, with the exception of foundational reports and studies. The goal of the scoping process was to find models, programs, and services that have been shown to work with children and youth in order to identify lessons learned, current gaps, and future intersections among service providers. In keeping with the focus of the CYCC Network, interventions and strategies being used around the world are included, with particular focus given to work that is being done here in Canada.

The literature reviewed for this report was assessed relative to its validity, reliability, objectivity, and generalizability, in order to ensure that the highest quality information is found. After reviewing a relevant article or report, both the source and methodology were assessed in terms of their reliability and strength, and incorporated into the findings of the report.

Although utilizing a new framework of analysis, this synthesis coincides with many of the standards of systematic reviews, including: an explicit research question; a systematic search strategy with pre-defined eligibility criteria for identifying and selecting relevant studies; an analytical framework for extracting and charting the data; and a comparative method for collating, summarizing, and synthesizing the main findings (Higgins & Green, 2011, sec. 1.2.2). It differs in its use of quantitative and qualitative approaches to collection information on best practices and lessons learned.

\[b. \text{ Scan of Network Partners’ Services, Programs, and Connections}\]

Following this broad review of the literature, a services scan was conducted with the CYCC network partners to identify the practice-based evidence derived from their work with children and youth in challenging circumstances. The scan was sent to 57 service providers, clinicians,

\(^2\) Grey literature is defined as “information produced on all levels of government, academia, business and industry in electronic and print formats not controlled by commercial publishing” (“What is Grey Literature?,” 2011). Although the web has greatly facilitated the production, distribution, and access of grey literature, these hard-to-find materials are often retrieved only through scans of relevant government or institutional websites.
researchers, and municipal, provincial, and federal government officials. The services scan incorporated both open-ended and direct questions about the programs of our partners and included questions on program goals, implementation, lessons learned, and evaluation. A total of 27 scans were returned. The responses to this scan presented interventions that are currently being used, identified effective practices, and revealed both existing gaps in service provision and potential areas for collaboration.

The services scan added to the scoping review of the literature by providing greater insights into the views of service providers, practitioners, and policymakers. It also returned a number of evaluations and reports conducted by partners of the CYCC Network. Much of this grey literature is rarely published commercially or indexed by major databases and can only be found through e-mail requests and on websites. This process provided a window into the models, programs, and services that have been shown to work and helped to identify their core elements, mechanisms, and contexts.

In addition to the services scan, follow-up meetings and conversations with network partners were valuable additions to the content of this report. This report highlights some of the interventions and approaches which these professionals found to be effective in working with children and youth in challenging contexts.

c. Meetings with Practitioners, Service Providers, and Researchers

Varying according to the contexts and cultures in which communities reside, the diffuse nature of local knowledge ultimately limited our ability to capture and operationalize this form of evidence. To compensate for this deficit to some degree and in order to explore the unique views of what works at the individual and community levels, this report conducted a survey of participatory action research (PAR), community based participatory research (CBPR), and narrative inquiry projects implemented among children and youth. PAR served as a useful proxy in this regard, as the principles of reflection, data collection, and action shared between the researcher and the researched provided insights into community development and the empowerment of communities, families, and children and youth. By engaging community champions and young people, and allowing them to actively shape the direction of the research, the PAR studies explored in this report provided a useful window into the operationalization of local knowledge. Similarly, CBPR’s emphasis on conducting partnership-oriented research that focuses on actively involving researchers, academics, practitioners and community members to address health inequities and improve a community’s well-being was helpful in demonstrating how partners with varying levels of skills and knowledge can work together to identify and address complex health issues on a local level. An examination of studies that employed narrative inquiry methods such as storytelling also helped to bring attention to the significance of working with communities to capture data and exchange local knowledge in culturally meaningful ways.

Scholars seeking to incorporate, capture, and use Aboriginal knowledge to guide their research have been particularly active in attempting to bridge the gap between different ways of knowing (Durie, 2004, p. 1140). Rather than assuming the superiority of one knowledge system over another, advocates have instead called for a model of two-eyed seeing that identifies and benefits from the strengths of each (Bartlett, Marshall, Marshall, & Iwama, forthcoming, p. 11). The key element of this model is recognizing and bridging the ethical space
that is created when worldviews of differing histories, traditions, and values come together through cross-cultural engagement (Ermine, Sinclair, & Jeffery, 2004, p. 20). Based on consultation, community participation, and methods that acknowledge, respect, and incorporate traditional knowledge, the intersection of these different ways of knowing involves a readiness to be inclusive and to recognize the integrity and unique contributions of both. Research based on this model of two-eyed seeing requires a balance of methods that are both scientifically rigorous and culturally appropriate. The emphasis on community ownership, context, and culture inherent within this alternative form of knowing offers valuable insights into the knowledge contained within local communities.

**d. Youth Workshops**

As a way of reviewing the recommendations from this knowledge synthesis report, a youth workshop was held in collaboration with **mindyourmind**.

**Mindyourmind** fully engages youth in developing resources to reduce the stigma associated with mental illness and increase access to community supports. Through the use of active engagement, best practice and technology, mindyourmind inspires youth to reach out, get help and give help (MYM, n.d.).

This space was created so that youth could share their insights on the recommendations in the report, as well as make suggestions for improving them. The conversations generated in these workshops were a critical step in preparing these reports and bringing the youth perspective into the report helped to inform its key messages and recommendations. This was also a way to access local knowledge, by connecting with individuals in this community who are part of the collective social context.

There were several key messages the youth raised that were added to the report as a result. These included the following points:

- Acknowledging diversity in mental health programs needs to go beyond culture and context to include gender and age.
- Youth should be engaged in developing programs and interventions as early as possible. They bring a unique perspective and expertise in using different mediums that are relevant to other young people

**e. Knowledge Mobilization Simulation**

The CYCC held a knowledge mobilization simulation that brought together service providers, academics, policymakers and youth with a vested interest in children and youth in challenging contexts. During this time, they engaged in reflexive simulations of different knowledge mobilization scenarios that explored how knowledge is shared across different groups, such as youth and government funders. The findings from this report, particularly the recommendations, provided the content for the scenarios and were the focus of discussions during the event. This also provided an opportunity for many Network partners to give their feedback on the reports.

For the technology report, a key theme that emerged from the simulation was the importance of designing and implementing programs and interventions in a way that was ethical and safe. The feedback from this event has been woven into the final report.
f. Analyzing the Information

This combination of a scoping review, services scan, and meetings with practitioners, researchers, and service providers presented a comprehensive depiction of the models, programs, and interventions currently being used with children and youth across a variety of challenging contexts.

Each level of evidence offers unique insights into the interventions currently being employed among children and youth in various challenging contexts. Evidence-informed practice offers an assessment of the outcomes and effects of interventions, ranked according to their scientific strength. Practice-based evidence provides a look into the core elements of programs and the processes through which they work. Local knowledge affords a greater understanding of the underlying cultures, traditions, and values that are necessary to ensure community ownership and program success. The overlaps and gaps within evidence-informed practice, practice-based evidence, and local knowledge are then discussed, followed by recommendations for developing best practices in working with children and youth in challenging contexts.

By capturing the complex linkages between outcomes, mechanisms, and contexts, this multi-layered approach is in agreement with the tenets of realist evaluation (Pawson, 2002a, 2002b). Emerging in response to the partial explanations of program success offered by quantitative and qualitative research respectively, this approach attempts to reconcile these limitations by bringing together the underlying logics of both. Recognizing that it is not programs themselves that generate change but rather their underlying causal mechanisms, this approach explores the conditions and resources that trigger success or failure and their relation to the unique subjects and settings of each intervention. This generative understanding of causation moves away from the traditional divides separating research, practice, and local knowledge and the tendency of each to ask what works in isolation from the others (Pawson, 2002b, p. 342). Instead it incorporates outcome, process, and context, with the ultimate goal of understanding what works, how does this work, and what works for whom in what circumstances. With an understanding of the opportunities for collaboration between these forms of knowing, the potential areas of collaboration between academics, practitioners, and communities across our population groups can be identified.

IV. Limitations

Moreover, as a result of the multiple forms of knowing captured within this report and the variable rigor of their respective methodologies, the CYCC Network avoided using strict criteria for best practices or evaluating the weight of certain forms of evidence relative to others. As opposed to ranking evidence according to conventional hierarchies of effectiveness, it considered each form of knowing in turn in order to explore and reveal the strengths and insights offered by each. As discussed above, best practices emerge from this collaboration of the best of evidence-informed practice, practice-based evidence, and local knowledge.

For this report, there was limited empirical research to be found to support the benefits of youth engagement at the individual, community, and organizational level. Much of the research on youth engagement is narrative, as the subject does not easily lend itself to quantitative-type
analysis. As a result, this report relies heavily on the local and practice-based knowledge that was found through this synthesis.
Section 3: Technology & Children and Youth in Challenging Contexts

In this section, the population groups identified in the methodology will be presented and defined, establishing the contexts on which this report is focused. This section will conclude with a presentation of the relevance of this report and its findings for practitioners and service providers.

I. Introduction

While technology can be used to help create positive change, it is important to note its potential to have negative impact on young people. In a report from mindyourmind, it was found that the negative effects of the internet have been identified in internet addiction, cyber bullying, and social isolation (Garinger, 2010, p. 12). There have been many studies that show the heightened risk for young people online as they are often more susceptible to being targeted by predators (Mitchell, Finkelhor, & Wolak, 2005; Mitchell, Jones, Finkelhor, & Wolak, 2011; Wolak, Mitchell, & Finkelhor, 2003; Ybarra & Mitchell, 2005).

According to Mitchell et al. (2011), the nature of technology-related crimes has been characterized by an increased number of cases along with the ever-changing tactics or offenders. While adults can be the offenders, many cases have shown that peer-abuse and bullying online is very common. In a report done by Child Helpline International (CHI, 2010), thirteen help lines were polled, with 2,255 cases of online abuse reported. The actual incidence of this type of violence is estimated to be much more rampant. With rapid developments in technology, there is a struggle to keep security and safety standards effective and relevant (Jones et al., 2012).

In spite of the challenges that face the use of technology, this report will focus on how technology can be used as a vehicle for promoting positive behaviour and effectively preventing violence. Technology is entrenched in youth culture (Jones et al., 2012), making it vital for us to both understand its application and how it can be used to promote and protect well-being. Technology can be used to bring a youth that is very isolated and allow him/her to create a connection that can help provide a supportive environment.

The Canadian Best Practice Portal presents their inclusion criteria for innovations and programs to be presented in their database. These standards address the focus and intention of an intervention, the evaluation of their program design, and the evidence of effectiveness. It is important to note that best practice does not suggest one optimal way of operation, but rather addresses whether the strategy used best matches the objective and desired outcome of an intervention (Dubois et al. 2008).

II. Focus

a. Health

Developments in technology over the past 10 years have presented opportunities for applying technology to service provision (Barak & Grohol, 2011), thus reaching people with services,
information, and support which may otherwise have been out of reach. In terms of healthcare services, technology has improved the ability of distance treatment and self-management to meet the needs of those suffering with chronic or mental illness (Lingley-Pottie & McGrath, 2007; Ruehlman, Karoly, & Enders, 2011). For example, internet-based interventions for pain management have become increasingly popular (Bender, Radhakrishnan, Diorio, Englesakis, & Jadad, 2011). Mental health services have also changed radically, as young people are able to access counseling and support without having to meet formally with a professional.

Innovations in health technologies have changed the way people engage with the healthcare system. Technology has not just changed how healthcare services are delivered, but also how they are received. The last decade has seen a surge of new technologies and interventions designed to deliver healthcare in more effective, innovative ways (Cole-Lewis & Kershaw, 2010; Collin et al., 2011). This report aims to discuss these interventions in the context of children and youth in challenging contexts and their specific needs.

b. Violence

Technology also has the potential to prevent violence among young people. This report will look at examples of how this is being done and the avenues yet to explore. There is potential for the virtual world created by social media to facilitate effective communication of positive behaviour messages. Using online forums and communication technologies, such as text messaging, video chats, and social networking websites, information can reach more people in a shorter amount of time than in the past. Recent world events have shown how the use of such tools can rally people—particularly youth—to support a common cause. This discussion moves away from the tool of technology itself to a robust argument for the resilience of young people who utilize what is in their hand to effect change and to have a voice.

III. Inclusion/Exclusion

For this report, only interventions with some degree of interactivity were included. Websites providing information only will not be explored. Researchers agree that interventions based solely on knowledge transfer are not as successful in affecting behaviour and attitude change as those which emphasize engagement and participation (Barak & Grohol, 2011; Roberto, Zimmerman, Carlyle, & Abner, 2007; Stinson et al., 2012). By focusing on the degree of interactivity, this report will include those interventions which are more likely to affect behaviour change and contribute to sustainable outcomes.

The common theme throughout the interventions in this report is the extent to which youth are involved and engaged with the program. Improving the ability of an intervention to be interactive allows for more space for youth voice and participation, which can strengthen the intervention as a whole.

IV. Population Groups

Children and youth, both here in Canada and around the world, face significant risks that work to compromise their well-being and development. The United Nations Convention on the Rights of the Child (UNCRC), was the first international convention, in 1990, and is made up of 54 articles and 2 Optional Protocols (UNHCR, 1990; UNICEF, n.d.). The standards and principles outlined by the UNCRC are the foundational elements to any work with young people. Vulnerable and at-risk young
people often face both collective and individual discrimination, and are usually at a disadvantage for accessing standard services intended for young people.

Children and youth in challenging contexts are by no means a homogenous group. There are different experiences, contexts and cultural factors influencing the situation in which they are in. Nonetheless, children and youth in challenging contexts face common threats that derive from constraints or challenges built into community or societal structures. It is not that certain populations are inherently more at risk than others; rather it is the context in which they reside that increase their exposure to various risk factors, heighten their vulnerability, and engender violence. Across all population groups run some cross-cutting themes which can result in “intersecting vulnerabilities” (Jiwani, 2006) for the children and youth in challenging contexts. The WHO ecological model provides a framework for understanding how these factors interact:

![Ecological Model for Understanding Violence](http://cyccnetwork.org/technology)

**Cross-cutting Themes**

Social inequality is a cross-cutting theme that captures the experiences of marginalized children and youth. Social inequality is “manifested in unequal access to goods, information, decision-making, and power” (Price & Feinman, 2010, p. 2). This unequal access to resources stems from discrimination drawn along the lines of race, age, disability, nationality, politics, religion, class, gender, and sexual orientation. Discrimination can occur on various levels such as exposure to prejudice on an individual level (for example, through racial discrimination) or on an institutional level (for example, political oppression of a population group through restrictive policies or unequal distribution of resources) and is inextricably linked to experiences of poverty and historical marginalization.

Similarly, historical marginalization and social exclusion are common threads that are woven throughout the challenging contexts described in this report. Historical trauma theory, a relatively new concept to public health research, has been used to explain why disease and inequities are more prevalent in some populations compared to others (Sotero, 2006). The basis of this idea is that populations who have been historically exposed to continuous levels of violence and discrimination typically display higher rates of disease and chronic illness (Sotero, 2006). The “intergenerational transmission of historic trauma” is a phenomenon that has been documented among several populations, including Cambodian, Aboriginal, and African American populations (Rosenheck & Fontana, 1998; Sack, Clarke, & Seeley, 1995; Sotero, 2006).

The influences of gender, moreover, are present across all contexts (Scheper-Hughes & Bourgois, 2004, p. 22). Girls and boys, for instance, are often at risk for different kinds of violence, with girls being the more frequent target of sexual violence in the home, schools, and communities, and boys the more likely victim of corporal punishment, violent assault or homicide (Pinheiro, 2006,
Social norms, particularly those underpinning conceptions of masculinity and femininity, are at the root of many of these trends” (Scheper-Hughes & Bourgois, 2004).

Dominant social and cultural expectations around gender and sex also compound the vulnerabilities faced by sexual minorities who are often targeted for their sexual orientation. It has been well documented for instance, that LBGTQ (lesbian, bisexual, gay, transgendered, queer) youth are at a particularly pronounced risk of physical violence (such as bullying), sexual violence and discrimination. This social stigma leaves sexual minority youth with a disproportionately higher risk of negative health outcomes such as suicide, substance abuse and emotional distress (Scheper-Hughes & Bourgois, 2004, p. 22).

**Ethical Considerations**

There are ethical issues in working with, and doing research with, children and youth, particularly those who are considered at-risk or vulnerable. These considerations include:

- Harm reduction (the benefits must outweigh the risks)
- “Do no harm”
- Respect for all actors
- Referral Systems: to ensure access to assistance, if needed
- Informed consent
- Confidentiality
- Engagement of children/youth in planning, developing, and evaluating resources/programs
- Competence- design and content of program

Attention to these issues is considered the backdrop of the programs and strategies that will be discussed in this report. Any program that is pointed to as a best practice must have an ethically sound methodology.

Paterson and Panessa (2008) contend that there is an ethical imperative to engage young people in all levels of service and intervention planning (p. 26). However, the challenge for people who work with children and youth in challenging contexts is to develop strategies to reach the youth effectively with the services and support that they need (Paterson & Panessa, 2008). In a study on foster care services by Golding et al (2006), they support this important point- that the recipients of a program should have a voice in the design and evaluation of the services provided to them.

A recent report from UNICEF (2012a) on the ethical principles of research with children identified a lack of clear standards when researchers who work with children and youth must balance conflicting ethical issues (p. 49). A key finding from the report was the need for guidelines to direct researchers as they respond to ethical considerations (UNICEF, 2012a, p. 61). These guidelines would help develop the link between ethical principles and good practice (UNICEF, 2012a, p. 63).
Introductory Note: Population Groups

The challenge for people who work with children and youth in challenging contexts is to develop strategies to reach the youth effectively with the services and support that they need (Paterson & Panessa, 2008). These population groups were identified through our Network Partners as children and youth who are particularly at-risk and marginalized. These distinctions were re-enforced by the literature found on these groups and the need for informed interventions that address their specific needs. It is important to explain the parameters employed in this report in terms of what groups were included and who may be identified within that group.

a. Children & Youth Affected by War

Violent conflicts and war have dramatically changed in nature over the past decades. What used to be predominantly characterized as violent conflict between 2 or more countries has now shifted, with most conflicts today occurring within national borders (Machel, 2009). Young people are particularly affected by these armed conflicts, as they are both the targets and, more frequently, the instruments of violence (‘Issues - Children and Armed Conflict’). This report will look at interventions with this population group, which includes children living in war-torn places, demobilized child soldiers, refugees and displaced children and youth, and young people in military families.

i. Child Soldiers

It is estimated that there are approximately 250,000 child soldiers around the world today. The Paris Principles, signed in 2007, defines child soldiers as:

A child soldier is any person under age 18 who is part if any kind of regular or irregular armed force or group in any capacity, including but not limited to cooks, porters, messengers and those accompanying such groups, other than purely as family members. This definition includes girls recruited for sexual purposes and for forced marriage. It does not, therefore, only refer to a child who is carrying or has carried arms. (The Paris Principles, 2007, p. 7)

In addition to this group are millions of young people who are living in a conflict or post-conflict zone. The reality of war in a community is the disintegration of the social support structure, which included both family and community supports (Denov, 2010). At the heart of this social structure are the women and children. The impact of violence on woman and children is multi-faceted and will be felt after the fighting stops. Research has shown that even after the violence has ended, children often continue to exhibit signs of depression and anxiety, which is proof that witnessing such atrocities can have negative consequences on mental health and development (Denov, 2010; Halcón et al., 2004). The World Health Organization estimates 20% of adolescents, globally, will experience a mental health problem, with the risk of this increasing in situations of violence, displacement and poverty (‘WHO | Young people’).

ii. Children & Youth in Military Families

Another group to consider here are children and youth from military families. In Canada, there were approximately 1.2 million young people with either one or both care-givers deployed in
active-duty (De Pedro et al., 2011). In the United States, 40% of the 2 million military personnel deployed since Sept 11, 2001 have children (Wilson, Wilkum, Chernichky, MacDermid Wadsworth, & Broniarczyk, 2011).

It has been found that distress levels of at-home family members of military personnel increases as separation increase (Lester et al., 2011). Even after the return of the deployed caregiver, their struggles with post-traumatic stress disorder (PTSD) can impact parent-child relations, prolonging the impact of deployment beyond the actual separation. While there has been research looking at the overall well-being of these young people, very little has been written about the link between stress and the social, familial, and academic challenges and behavioural/emotional problems (Chandra, Burns, Tanielian, & Jaycox, 2011).

b. Refugee Children & Youth

Displacement is a frequent characteristic of war and disasters. Often that displacement forces people to leave homes and communities for safe havens within their nation’s borders. In many cases, people have been forced to flee their country entirely. As a result of violent conflict and disasters around the world, there are now refugees on every continent (Berman et al., 2009, p. 419). A subset of refugee children and youth are those who are unaccompanied and have no adult support in their lives. These young people are particularly vulnerable to violence, exploitation and abuse.

In 2011, there were 15,600 refugees admitted into Canada which was approximately 40% of all applications received (Immigration and Refugee Board, IRB, 2011). This is proportional to other countries like Canada. According to UNHCR, the number of refugees has increased from 1.5 million in 1951 (at the time of its creation) to 32 million refugees and displaced persons (Berman et al., 2009; UNHCR, 2008).

Immigrant and refugee children are among the most vulnerable populations, as their precarious situation can impact their physical, emotional and mental well-being (Khanlou, 2008). In research and practice with immigrants and refugees there is a tendency to lump the two into one group. As a result, the specific needs of these children go unattended. It is important to recognize that the contexts and situations from which refugees come from vary, resulting in differing needs and values within this population group. In this report, refugees will be discussed within the population affected by war or by natural disaster, but it is important to recognize that many national programs and strategies target refugees and immigrants as one, uniform group of newcomers. In this discussion of interventions with refugee children and youth, the complexities of this group will present particular challenges for using technology as a means of effectively reaching these young people.

c. Children & Youth Affected by Natural Disasters

Children and youth are the most vulnerable victims of natural disasters (“Rebuilding Children’s Lives after Natural Disasters,” n.d.; UNICEF, 2006). This report identifies natural disasters as: “a rapid, instantaneous or profound impact of the natural environment upon the socio-economic system” (Alexander, 1993). Specific disasters can include hurricanes, droughts, floods, tornados and earthquakes (Lazarus, Jimerson, & Brock, 2003). A result of such events can result in the separation of child from community as well as separation from family members. A report issued by the Canadian Red Cross points to underlying social determinants as factors which expose disaster-affected populations to violence (i.e. gender discrimination, income inequality, abuse of power)
This is an important issue, as the number of natural disaster occurring each year has increased from 78 in 1907 to 348 in 2008 (“Rebuilding Children’s Lives after Natural Disasters,” n.d.).

For example, the tsunami in Indonesia in 2004 left thousands of children without family or a care giver. An estimated 225,000 lives were lost, of which approximately a third were children (UNICEF, 2006). According to UNICEF and the Government of India, in the Southern State Tamil Nadu which was the worst hit part of India, 289 children were left as double orphans (Exenberger & Juen, 2010). Homes, farms, livelihoods and industries were destroyed, completely changing the community support structure (UNICEF, 2006). A common feature of natural disasters is displacement, which can last from very short to extended period of time, depending on the damage (Lazarus et al., 2003). The trauma experience by children in these types of situations is significant. This report will draw specific attention to children affected by natural disasters and how youth technology could be used effectively with this group.

d. Immigrant Children & Youth

In Canada, there are about 250,000 immigrants admitted into the country each year, with a high percentage of these newcomers being children and youth. Nearly 24% of immigrants are under the age of 16 and approximately one in ten girls admitted is under 15 years of age (Berman et al., 2009). In fact, of all children in Canada under the age of 15, one in five was either born abroad or born into an immigrant household (NCCYS, n.d.; Statistics Canada, 2006).

The adjustments needed to settle into life in a different country and culture can have a significant impact on young people. Struggling to adapt to different norms and community values can adversely impact a child’s ability to achieve positive cultural identity (Ngo & Schleifer, 2005). One protective factor for immigrant children and youth is that of family support and community. Being able to communicate with their family in their native language has been shown to be a positive influence on children’s adjustment into a new culture (Theron et al., 2011). Even still, the emotional and psychological strain can influence a young person’s well-being, both in the immediate and in their future development.

In addition the psychosocial stressors which immigration can feed into, there is also the socio-economic situation of immigrant communities. Beiser and Stewart (2005) argue that, “Despite Canada’s generally high standard of living and despite a system that promises universal access to high quality care, disparities in health remain a pressing national concern” (Beiser & Stewart, 2005, p. S4).

It is important to recognize that the contexts and situations from which immigrants come from vary, resulting in differing needs and values within this population group. In this discussion of interventions with immigrant children and youth, the complexities of this group, not to mention the cultural differences within, will present particular challenges for developing programs that effectively reach these young people.
e. Children & Youth Subject to Maltreatment

Maltreatment of young people is a serious and far-reaching problem, making it difficult to accurately capture the scope of the problem. According to the Canadian Incidence Study of Reported Child Abuse and Neglect (2010), there were approximately 235,842 child maltreatment investigations conducted in 2008 in Canada (Jack, Munn, Cheng, & MacMillan, 2006). In the United States, there are approximately 3 million reports of child maltreatment a year, with about five deaths of children a day as a result of abuse or neglect. Approximately 80% of these deaths happen to children under the age of four (CDC, 2012). The World Report on Violence against Children (Krug et al., 2002) states that emotional, physical, and sexual violence is rampant. At any one time, an estimated 1.8 million children are being sexually exploited for profit across the world (Save the Children UK, 2007). Each week, more than 20,000 images of sexual torture of children are posted on the internet (Loader, 2005; Singh & Fairholm, 2012).

While the occurrence of maltreatment is slightly higher with girls than boys, the major difference is found across ethnic lines, with disadvantaged communities showing higher rates of child abuse (CDC, 2010). Forms of maltreatment have been divided into 4 categories, which are physical abuse, sexual abuse, emotional abuse, and neglect (CDC, 2012).

1. **Physical Abuse** involves deliberately using force against a child in such a way that the child is either injured or is at risk of being injured. Physical abuse includes beating, hitting, shaking, pushing, choking, biting, burning, kicking or assaulting a child with a weapon. This may consist of one incident or it may happen repeatedly (Government of Canada, Department of Justice, 2006). It is also important to note that the most vulnerable age group to physical abuse is 1 year and under (DeVooght, McCoy-Roth, & Freundlich, 2011).

2. **Sexual abuse** and exploitation of children and youth occurs when an older child, adolescent or adult takes advantage of a younger child or youth for sexual purposes, including for participation in prostitution, pornographic performances and in the production of pornography (Government of Canada, Department of Justice, 2006). This can happen both in person and at a distance, often through the misuse of technology (Chisholm, 2006). Many communications technologies can increase a young person’s vulnerability, where abuse online can turn into real life encounters that put young people at risk (Because I am a Girl, 2010).

3. **Emotional abuse** involves harming a child’s sense of self. It includes acts (or omissions) that result in, or place a child at risk of, serious behavioural, cognitive, emotional or mental health problems. For example, emotional abuse may include verbal threats, social isolation, intimidation, exploitation, or routinely making unreasonable demands (Government of Canada, Department of Justice, 2006).

4. **Neglect** involves failing to provide what a child needs for his or her physical, psychological or emotional development and well-being. For example, neglect includes failing to provide a child with food, clothing, shelter, cleanliness, medical care or protection from harm (Dept. of Justice, Government of Canada, 2006a).

There is no one single cause or predictive factors for situations of child abuse. Research has shown, however, that children who have experienced abuse are more likely to not only abuse their
children, but are more likely to participate in criminal activity (Fang, Brown, Florence, & Mercy, 2012). One study, for instance, suggests that certain victims of bullying tend to come from neglectful or abusive homes, contributing to anxious or aggressive behaviour that results in their bullying of others and their own victimization by peers (Smokowski & Kopasz, 2005, p. 105). Despite the studies done to uncover the extent of this issue, it is not possible to know exactly how many victims of maltreatment there are (Dept. of Justice, Government of Canada, 2006b). Whether it’s a fear of exposure, fear of reporting, reluctance to define a situation as “abusive”, the reality is that there are no numbers or statistics to definitively capture its impact.

It is important to consider the long-term effect of maltreatment on children. Violence against young children has been shown to leave a “genetic imprint”, reducing the ability of the child as they grow into adulthood to cope with stress in a positive way (McGowan et al., 2009; Singh & Fairholm, 2012). Fetal Alcohol Spectrum Disorder (FASD) - a conditions caused by alcohol consumption during pregnancy- can impact a child’s life in physical, mental and emotional ways (Health Canada, 1997; Singh & Fairholm, 2012) The Canadian Child Welfare Research Portal, developed through the Centre of Excellence for Child Welfare, has been active in pooling academic literature on child abuse and neglect (Centre of Excellence for Child Welfare, 2012). In many cases, these reviews point to the potential of certain treatments in addressing the effects of child maltreatment, yet have cautioned that the evidence base is tenuous at best and in need of further research.

The ramifications of child maltreatment on society are immense, and countries are only now coming into a more holistic definition of abuse, which encompasses treatment that would threaten and compromise a child’s health and well-being. Interventions with this population group must address the specific challenges and interests at work in a young person’s world, where there has been abuse of some kind. This report will explore what has worked and where technology can improve their effectiveness.

**f. Children & Youth in Alternative Care**

Children and youth who find themselves in institutions are often at greater risk for violence and exploitation (Pinheiro, 2006). Issues such as inadequate staffing, lack of monitoring, and low priority contribute to the vulnerability of young people in these settings (Pinheiro, 2006).

For this report, alternative care is defined as:

Care for orphans and other vulnerable children who are not under the custody of their biological parents. It includes adoption, foster families, guardianship, kinship care, residential care and other community-based arrangements to care for children in need of special protection, particularly children without primary caregivers (UNICEF, 2006, p. 15).

There are millions of children and youth around the world who are in, or are at risk of soon entering, alternative care settings; either as a result of the loss of their guardian(s) or abandonment. According to SOS international, there are approximately 45,000 orphans in Canada (SOS Children’s Villages Canada, n.d.). Statistics Canada has no information on orphans or orphanages in Canada. According to Elizabeth Wiebe- founder of The Elizabeth Wiebe Society for Orphaned Children in Canada- there are approximately 88,000 young people living in foster care across the country (Wiebe, 2007). Aboriginal youth make up a disproportionate amount (30-40%) of all young people in alternative care nationally (Farris-Manning & Zandstra, 2003).
UNICEF estimated that in 2010 there were approximately 50 million children in Sub-Saharan Africa who would lose at least one parent and 10 million who would lose both. SOS Villages estimate that there are approximately 1.5 million children across Europe and Central Asia living in public care settings (SOS Children’s Villages International, n.d.).

Young people around the world can find themselves under the care or guardianship of an institution. This type of alternative care can include various places from foster care (formal and informal) and orphanages to juvenile detention centres. Emily Delap from Family for EveryChild presented these key definitions of the types of alternative care that exist:

- **Kinship Care**: “...family-based care within a child’s extended family or with close friends of the family known to the child, whether form or informal in nature”.
- **Foster care**: “Situations where children are placed by a competent authority for the purpose of alternative care in the domestic environment of a family other than the child’s own family”.
- **Residential Care**: “Care provided in any non-family-based setting, such as places of safety for emergency care, transit centres...and all other short and long term residential care facilities including group homes” (Delap, 2012).

Whatever they may be called, these alternative forms of care are responsible for the day-to-day life of the young people in their care.

### i. Children & Youth in Institutions

Orphanages and large group homes, are often the default for many national systems, where these institutions are favoured for dealing with children without family support. These settings however are not ideal. There is much research to show that children and youth need individualized care that is best provided by a guardian or family member (Pinheiro, 2006). The main concern is that without standards for quality of care, children and youth are not getting the support they need (Macdonald & Turner, 2008; SOS Children’s Villages International, n.d.; Turner & Macdonald, 2011). In 2009, Guidelines for the Alternative Care of Children were presented to the UN as an enhancement to the UN Convention on the Rights of the Child (UNCRC) (“UN Guidelines for the Alternative Care of Children - ISS SSI,” 2009). Implementation of such guidelines is critical for the improvement of alternative care within these institutions.

Without individualized support, these vulnerable youth often leave these institutions without the necessary preparation for life on their own (SOS Children’s Villages International, n.d.). This report will look at interventions that use technology as a means of engaging them in the community in a positive, sustainable way.

### ii. Juvenile Detention

In Canada, there were 40,300 youth admissions to youth correctional services between 2008-2009 (Calverley, Cotter, & Halla, n.d.), which amounts to 0.52% of all youth in Canada under the age of 19 (Public Safety Canada, n.d.). This is an improvement from previous years. At the time which the Youth Criminal Justice Act (YCJA) was implemented in 2003, Canada had some of the highest rates of juvenile detention in the developed world (CCRC, 2011). Since then, the rate of young people in custody has fallen by 27% across the country (CCRC, 2011, p. 1). In 2009 in the United States, 1.16 million people under the age of 18 were arrested by law enforcement (“Juvenile Justice Reform,” n.d.; US Dept. of Justice, 2009). This is also a decline from previous years, though not as large as Canada (4% decline) (US Dept. of Justice, 2009). However, trends have been identified,
both in Canada and the US, of disproportionate detention rates between racial groups (NAACP, n.d.).

There are 3 global instruments that have been created to address the treatment of young detainees in conflict with the law (Goldson & Muncie, 2012): United Nations Standard Minimum Rules for the Administration of Juvenile Justice (the Beijing Rules) (1985); United Nations Guidelines on the Prevention of Delinquency (the ‘Riyadh Guidelines’) (1990a); and the United Nations Rules for the Protection of Juveniles Deprived of their Liberty (the ‘JDL Rules’ or the ‘Havana Rules’) (1990b). These resolutions all articulate standards for the treatment of young people in detention. When it is necessary to detain a young person in correctional services, it is required that a safe environment, with adequate staffing, protective systems and programming, be provided (Pinheiro, 2006). This is a highly contested issue, as many argue that juvenile detention does not solve anything and, in fact, keeps youth in a place of vulnerability to both interpersonal and institutional violence (Goldson & Muncie, 2012).

g. Aboriginal Children & Youth

Aboriginal people comprise approximately 4% of the population of Canada, (1,325,000 people) and this number is growing faster than any other population group (S. D. C. Government of Canada, 2006). The term “Aboriginal” in Canada refers to First Nations, Métis and Inuit peoples. A large proportion of aboriginal people live in northern Canada, as well as the Prairie Provinces (Manitoba, Saskatchewan, and Alberta). Nearly one-half of Aboriginal people today live in urban centres (S. D. C. Government of Canada, 2006). Internationally, many indigenous peoples are often politically and socially marginalized. According to the UN Permanent Forum on Indigenous Issues, there are more than 370 million indigenous peoples living in 70 different countries around the world (UN, n.d.). This report will focus on the indigenous people of Canada.

The average age within Aboriginal communities is actually younger than other communities in Canada. According to Statistics Canada, the median age of Aboriginal population is 27 which is 13 years lower than the median age of non-Aboriginals. There is not a lot known about the intersecting influences of emotional well-being, and poverty, violence, and racism that aboriginal youth face (Berman et al., 2009). Intergeneration, historical issues have resulted in present-day disadvantages for Aboriginal young people (Hay, 2004). Within this group, there are high levels of alcohol and drug addiction, eating disorders, HIV/AIDS and other STIs (Beauvais, Wayman, Jumper-Thurman, Plested, & Helm, 2002; Craib et al., 2003; Croll, Neumark-Sztainer, Story, & Ireland, 2002).

Suicide rates in Aboriginal Communities are 5 times higher than in non-aboriginal communities (Health Canada, 2005). Aboriginal girls are seven times more likely than non-Aboriginal girls in Canada to commit suicide just as they are more likely to witness and experience violence in their homes (Berman et al., 2009, p. 421). It is important to note that among the few studies that have been conducted with Aboriginal youth, only a small proportion of them address the specific needs and experiences of Aboriginal girls (Berman et al., 2009; Downe, 2006).

Canadian data indicates that less than half of Aboriginal students finish high school, compared to an 88% graduation rate among non-Aboriginal students (Pirbhai-Illich, 2010). However, it would be a mistake to view these numbers and statistics independent of the cultural and historical context. Many First Nations communities have started putting a focus on developing awareness and understanding of their cultural heritage. By fostering pride in their identity and history, these communities are working to restore what was lost in the assimilation policies of the government. As argued by Crooks, Chiodo, & Thomas (2009):
By placing the high rates of violence, substance abuse, and poverty experienced by Aboriginal families into the context of colonization and assimilation, this perspective shifts the perceived deficits away from the individual and allows us to focus instead on the resilience many of these youth have demonstrated.

A disproportionate number of Aboriginal children and youth are the subject of child maltreatment investigations, most concerning allegations of neglect, while up to 40 percent of the 76,000 children and youth in out-of-home care in Canada derive from Aboriginal families (Blackstock, Trocmé, & Bennett, 2004, pp. 901–902). Some estimates suggest that there are currently three times more Aboriginal children and youth in the Canadian child welfare system than at the height of the residential school system in the 1940s (Blackstock, 2007, p. 74). This overrepresentation is reflective of the multiple disadvantages that Aboriginal families continue to face today (Trocmé, Knoke, & Blackstock, 2004, p. 595), and is arguably the product of Canada’s former assimilationist policies and lingering racial bias (Lavergne, Dufour, Trocmé, & Larrivée, 2008, p. 72,74). The situation of many Aboriginal young people makes them particularly vulnerable to sexual exploitation (CRC, 2008). Often coming from desperate situations, young people engage in the sex trade without understanding the implications. According to Save the Children, Aboriginal women actually account for up to 70% of visible street-based sex work in Canada (Kingsley & Mark, 2000).

In light of the prevalent cultural and socio-economic disadvantages faced by Aboriginal young people, this report will discuss interventions with this group and how technology can be utilized to promote well-being and safety. Engagement with Aboriginal children and youth, in turn, should recognize the strengths that have prevailed throughout this history of subjugation and marginalization, and the individual, community, and cultural coping mechanisms that have emerged as a result.

h. Homeless Children & Youth

There is no one definition for ‘homeless’ or ‘street youth’, as context plays directly into how these youth conceptualized as a population group. In Canada, the Homeless Hub has proposed this definition:

Homelessness describes the situation of an individual or family without stable, permanent, appropriate housing, or the immediate prospect, means and ability of acquiring it. It is the result of systemic or societal barriers, a lack of affordable and appropriate housing, the individual/ household’s financial, mental, cognitive, behavioural or physical challenges, and/or racism and discrimination. Most people do not choose to be homeless, and the experience is generally negative, unpleasant, stressful and distressing (“Canadian Definition of Homelessness,” 2012).

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3 In a 1998 sample of the Canadian Incidence Study, Aboriginal children and youth accounted for 16 percent child maltreatment investigations, despite representing only 5 percent of the Canadian population (Blackstock, Trocmé, & Bennett, 2004, p. 912). Similar results have been reported from the 2003 sample (Lavergne, Dufour, Trocmé, & Larrivée, 2008, p. 71).
There are estimated to be 150,000 homeless youth in Canada today (PHAC, 2006)- 64% of this number are male under the age of 25 (Covenant House Toronto, 2010). In the United States, it is suggested that more than 1 in 45 children will experience homelessness annually (“Campaign to End Child Homelessness,” 2010). While, in both Canada and the US, causes of homelessness vary, an abusive situation or event (physical, sexual, or emotional) has been a common reason youth have left home (Covenant House Toronto, 2010). Youth homelessness is a global issue- estimates have reached as high as 100 million children living on the street, but this is an approximate number, as definitions of who street children are exactly, are hotly contested (Consortium for Street Children, 2009).

In spite of the lack of definition, the main characteristic of homeless youth is their living conditions, and the inherent risks that come along with their situation (Murphy, 2011). Such conditions include physical, emotional and psychological vulnerability, which often leads to risky behaviour, compromising their health and well-being (Berman et al., 2009b PHAC, 2006). In Canada, for example, 82% of homeless reported having a crime committed against them, with the majority of those crimes being physical or sexual abuse (Berman et al., 2009; Consortium for Street Children, 2009).

The term homeless youth encompasses young people whose families have become homeless as well as unaccompanied homeless (Barry, Ensign, & Lippek, 2002; Murphy, 2011). The latter group can be broken down yet again. Murphy (2011) presents a framework which describes unaccompanied homeless youth into 3 main divisions:

- Runaway homeless: youth who leave home for more than 24 hours without permission, and whose whereabouts are unknown.
- Throwaway homeless: youth who have been told to leave home and prevented from returning.
- System homeless: youth whose social service placements are unsuccessful, resulting in their homelessness (Murphy, 2011, p. 41).

As mentioned above, the varying contexts and complexities of homeless youth prevents a universal intervention or approach from being possible. Also, gender differences present a unique set of needs specific to either boys or girls that are often overlooked when addressing “homeless youth” as one, uniform group (Berman 2009; p. 420).

As this report looks at interventions being used with this population group, it is the goal that the many different programs and strategies already employed by our network partners will be able to learn from and inform each other for the purpose of improving the services available to homeless children and youth.

i. Youth Gangs

According to Public Safety Canada (2011), youth gangs typically consist of young people “who self-identify as a group (e.g. have a group name), are generally perceived by others as a distinct group, and are involved in a significant number of delinquent incidents”. Youth gang members do not come from one exclusive group. In fact, they represent many different ethnicities and backgrounds (P. S. C. Government of Canada, 2011). However, youth at risk of joining gangs or already involved in gangs tend to be from groups that suffer from the greatest levels of inequality and social disadvantage. In fact, approximately 22% of all gang members in Canada are Aboriginal (Totten, 2009).
The scan of literature on children and youth in gangs and organized armed violence found two systematic reviews on discouraging gang involvement, focusing on opportunities provision and cognitive-behavioural therapy respectively (Fisher, Montgomery, & Gardner, 2009; Fisher, Gardner, & Montgomery, 2009). Neither, however, could find any studies that met their inclusion criteria. These studies focused primarily on primary prevention initiatives aimed at the deterrence of gang violence and juvenile delinquency in the first place, which appears to be representative of most literature on youth gangs (Limbos et al., 2007, p. 68).

According to Fisher, Gardner & Montgomery (2009) gang members are more likely to be involved in crime, including drugs, the sex-trade and violent offences, compared to non-gang youth. Reasons for joining gangs vary with some seeking belonging and protection, where they have not had at home, while others looking to make money and establish themselves and their reputation (Government of Canada, Public Safety Canada, 2011). Resulting from this violent lifestyle is an increased risk towards psychosocial well-being (Fisher, Gardner, & Montgomery, 2009).

The reality is that youth gangs span a number of the population groups highlighted in this report (Aboriginal youth, homeless youth, children affected by war). The challenging contexts in which these children live increase their vulnerability and likelihood of adopting a lifestyle of high-risk behaviours, which are negative both for the community and their own health and well-being. Public Safety Canada (2011) has argued that the nature of this situation calls for integrated, targeted and evidence-based community solutions. In order to stop the cycle and system of violence and crime with youth, it is necessary to ensure that our interventions are informed, relevant and affective in reaching this population group.

### j. Child Labourers

#### i. Children & Youth in the workplace

Canada has a 47% employment rate for young people age 15-24 (Statistics Canada, 2012a). In Canada, each province sets its standards for when a child can start working and under what conditions (CBC, 2006). According to international law, the minimum age at which children and youth can engage in general labour is 15 years, and 18 for hazardous work. Nonetheless, in 2010 there were an estimated 215 million child labourers reported worldwide. Of these, 115 million were engaged in hazardous work, often considered a proxy for measuring the worst forms of child labour (International Labour Organization, 2010, p. 5).

The ILO reported 215 million child labourers worldwide in 2010, with more than half of them in the Asian-Pacific region (ILO, 2010). A significant number of these workers (60%) are in the agricultural sector, with some also being involved in the industry and services sector (“What is child labour,” n.d.). While, on the whole, this number has decreased since 2004, specific groups have seen an increase. For example, child labour within the age group of 15-17 years saw a 20% increase since 2004 (ILO, 2010).

Children and youth in the workplace has not been a new phenomenon- in fact, most countries and contexts have seen child workers as a common feature of the community. Research has shown that not all forms of child and youth work is negative, as long as they are not in danger, receive fair wages, and are able to attend and complete their schooling. When these safeguards are not in place, the young person can experience negative impacts on their health and well-being (“What is child labour,” n.d.).

In terms of the socio-economic impact, it has been shown that the younger children begin work, the less wages they will earn throughout their lifetime, compared to someone who started
later in life (Emerson & Souza, 2003). Also, children who are child labourers are more likely to have their children become child labours, perpetuating this cycle (Emerson & Souza, 2003).

There is general agreement that child labour is undesirable, in that it exposed young people to exploitation, but wide disagreement on how to tackle this problem (Emerson & Souza, 2003; Ray, 2000). According to the International Labour Organization (ILO) determining whether or not particular forms of “work” can be called “child labour” depends on the child’s age, the type and hours of work performed, the conditions under which it is performed and the objectives pursued by individual countries (“What is child labour,” n.d.). Simply removing children and youth from violent workplaces, however, will fail to address the economic, social, and cultural drivers underlying their involvement in these contexts. Criminalizing these activities further punishes children and youth for factors beyond their control, while ignoring their sincere efforts to help improve the economic state of their family (Pinheiro, 2006, pp. 233–234). Though exploitative, child labour is in many cases born of economic need and desperation, thereby necessitating interventions that address the reality of poverty and unequal life chances.

Not much is known about the specific impact of child labour on mental health (Catani et al., 2009), which calls for more research to be done on this topic. In general, the overall health status of child workers is lower than schooled children (Joshi, Shrestha, Shrestha, & Vaidya, 2012). Like youth gangs, these children and youth are not a separate group from the other children and youth in challenging contexts discussed in this report. The cross-over between this and other groups is considerable, which presents a further level of complexity to developing interventions and strategies that will meet their needs.

ii. **Children & Youth Who Have Been Trafficked**

Other forms of child labour, however, derive from the threat of violence and coercion. Slavery, the sale and trafficking of children, debt bondage, and the forced recruitment of children for use in armed conflict, are considered to be “the worst forms of child labour” (International Labour Conference, 1999, article 3). Nonetheless, roughly 1.2 million children and youth are believed to be trafficked each year for the purposes of prostitution, forced labour, or other forms of exploitation (International Labour Organization, 2002, p. 25; “UN.GIFT: Human Trafficking- The Facts,” n.d.; United Nations Crime and Justice Information Network, 2000, p. 2). This estimate most likely underestimates the magnitude of the problem, due to a lack of reliable data and the paucity of more recent assessments (Public Safety Canada, n.d.; UNICEF, 2011, p. 34).

Due to the illicit nature of this activity, there are no specific numbers for how many young people are trafficked into Canada, though traffickers are estimated to make millions of dollars in profits (Public Safety Canada, n.d.). Benjamin Perrin at UBC has lead the way in bringing to light the issue of human trafficking right here in Canada (Perrin, 2010) at Child trafficking is defined as: “The recruitment, transportation, transfer, harbouring or receipt of a child for the purpose of exploitation” (United Nations Criminal Justice Information Network, 2000).

While the definition of trafficking in relation to adults centres around choice, consent, and agency, such issues are not even considered in the agreed understanding of child trafficking (O’Connell Davidson, 2011), meaning that all children used for the purpose of exploitation, as outlined above, are considered to be trafficked persons. Exploitation of trafficking victims ranges from involvement in hazardous labour, sexual exploitation, domestic servitude, street begging, to criminal activities (Redmond, 2008).
Conceptual frameworks such as the “3P’s paradigm” - Prevention, Protection, and Prosecution - have sought to address the complexities of interventions with this population group. Such frameworks are supported by international human rights law, which states that slavery and forced labour is illegal (Obokata, 2010). Human trafficking became a global issue with the emergence of globalization. As international transportation has become faster and easier, human trafficking has established itself as the third most profitable criminal activity in the world (behind only drugs and small arms) (UNODC, 2000), and is expected to continue to grow.

Child trafficking is not only a problem for source countries, or nations where children are typically taken from. Children are trafficked within and across borders in almost all countries (UNICEF, 2009). At any one time, an estimated 1.8 million children are being sexually exploited for profit across the world (International Labour Organization, 2002) fed by 1.2 million children trafficked every year (Singh & Fairholm, 2012). Child soldiers are another way which children can be trafficked. An issue faced by many countries is the lack of legislation protecting trafficked persons - often they are treated as detainees, as there are no specific laws to determine how their situation should be handled (CCR, n.d.).

For children who have been rescued from trafficking rings, there are a unique set of concerns and risks to their well-being. “Barnardo’s Safe Accommodation Project” at the University of Bedfordshire in the UK (2012) has found that of the children who have currently been rescued, 18% had gone missing from alternative care settings. Their recommendations are to improve the quality and security of care services they receive (Shuker, 2012). Often children most at-risk of being trafficked are those in situations of poverty (Cameron & Newman, 2008). Those who are without a family or guardian are more susceptible to being abducted or recruited. This report will include interventions used with this group for the purpose of contributing to more informed interventions which can effectively reach this group and address this global problem.

k. Children & Youth Living with Health-Related Challenges

Despite a growing awareness of the increased risk of violence faced by the estimated 93 million children and youth worldwide with moderate or severe disability (World Health Organization, 2012), little is known about its forms or effects. In Canada, approximately 4% of youth under 25 years have some form of disability (HRSDC, 2006). A recent systematic review released through the World Health Organization’s Department of Violence and Injury Prevention and Disability estimates that children and youth with disabilities are three to four times more likely than peers without disabilities to be victims of violence. Up to a quarter of these young people will experience violence at some point in their life (CMHA, n.d.-a, p. 8). Some suggested reasons for this increase include “stigma, shame or lack of support of caregivers, negative traditional beliefs and ignorance, or heightened vulnerability due to the need for increased care” (Jones et al., 2012, p. 1). Robust evidence in this regard, however, remains scarce as a result of a lack of well-designed research studies, poor measurement of disability and violence, and limited research in middle- and low- countries (CMHA, n.d.-a, p. 8). This report will present two of the most common forms of disability: chronic illness and mental illness.

i. Children & Youth Living with Chronic Illness

Chronic illness has risen to be the leading cause of death globally (63% of all deaths). Heart disease, stroke, cancer, chronic respiratory diseases and diabetes, are the most common types of chronic illness that exist today (“WHO | Chronic diseases,” n.d.).
The word ‘chronic’ is typically used for conditions, illnesses, and diseases lasting three months or more. Often, chronic conditions are characterized by lasting symptoms and/or pain that persists, sometimes even despite treatment (‘What Is Chronic Illness?’, n.d.).

In Canada, nearly half-a-million children and youth suffer from chronic illness—this would include asthma and/or disabilities (Health Canada, n.d.). Thanks to the advances in technology and medicine, illnesses and diseases which would have once been fatal have now been classified as chronic, as survivor rates, particularly of childhood cancer, has increased from 59% in 1975 to 80% in 2002 (Irwin & Elam, 2011; Martinez & Ercikan, 2009). Yet the ability to receive proper care is pivotal to survival—a reality which escapes many young people. Children in rural and/or impoverished areas do not have the same degree of access to quality care, which can adversely impact their well-being. This report will include interventions done with children with chronic illness, with specific attention paid to how service delivery can better reach this population as a whole.

It is with this population group that children and youth affected by HIV/AIDS are discussed. According to UNICEF, of the 34 million people living with HIV, are 16.7 million children under the age of 15 (UNICEF, 2012b). As there is no cure, young people are faced with challenge of managing their health over the long-term, similar to those with chronic illness. Human immunodeficiency virus (HIV) is an infection which damages a person’s body by attacking the CD4+T cells in the blood (CDC, 2006). This virus can lead to acquired immune deficiency syndrome (AIDS), which significantly weakens the body’s immune system. It has been found that antiretroviral treatment (ART) can slow this progression (“WHO | HIV/AIDS,” 2012). In 2009, approximately 40% of all new HIV+ cases occur in people between the ages of 15 and 24. HIV can be transmitted through “unprotected sex, transfusion of contaminated blood, sharing of contaminated needles, and between a mother and her infant during pregnancy, childbirth and breastfeeding” (“WHO | HIV/AIDS,” 2012).

The socioeconomic conditions in which young people live can increase their risk of contracting HIV. Vulnerability can be intensified through poverty, lack of education or awareness, and exposure to dangerous circumstances (“WHO | Young people,” n.d.). While prevention is a key component in improving well-being, the population of young people who are HIV positive need specific attention and interventions in order to safeguard their well-being. This report will discuss lessons learned with this population group and how researchers and practitioners can better service their needs.

ii. **Children & Youth Living with Mental Illness**

Mental illnesses are characterized by alterations in thinking, mood or behaviour (or some combination thereof) associated with significant distress and impaired functioning over an extended period of time (Health Canada, 2002).

It is estimated that 50% of mental disorders begin before the age of 14 (Catania, Hetrick, Newman, & Purcell, 2011). Approximately 20% of the children and adolescents around the world are estimated to have mental disorders or problems, regardless of cultures or backgrounds. In Canada, there are approximately 1.5 million children suffer from a diagnosable psychiatric disorder, yet only 1 in 5 actually receive the treatment (CMHA, n.d.-a). In developing or underdeveloped countries, where the highest proportion of their people are under 19, they typically have the poorest mental health services (Catania et al., 2011; “WHO | 10 facts on mental health,” n.d.).
There are significant gender differences both in experiencing and reporting mental health concerns. According to a report by the Girls Action Foundation in Canada (2008), adolescent girls present higher rates of depression than their male counterparts (p. 6). It was found that “girls and young women are more likely to internalize mental health issues and mental illnesses, while boys and young men are more likely to externalize mental health issues” (Depauw & Glass, 2008, p. 7).

If mental health problems in young people go unaddressed, the potential for lifelong struggles is increased. These struggles not only adversely impact the individual, but their family, their community, and the health system (WHO, 2003). Most mental illnesses are not life-threatening, though they can often negatively impact an individual’s well-being. Suicide is an example of this (Boden, Fergusson, & John Horwood, 2007; CMHA, n.d.-a; Evans, Hawton, & Rodham, 2005).

Globally, suicide is the leading cause of death from violence (Krug et al., 2002). Across Canada, suicide is the leading cause of death for males between 10 and 49 and the fourth leading cause for women (CMHA, n.d.-a). In 2009, 3,890 suicide cases were reported in Canada; of these, 504 were under the age of 25 (Statistics Canada, 2012b). However, rates are higher among Aboriginal people. In fact, Aboriginal people in Canada have the highest suicide rates of any other “culturally-identifiable group” in the world (Chandler & Lalonde, 2004). In the United States, there are approximately 34,000 people who commit suicide annually (Kretschmar & Flannery, 2011). There is also estimated to be 25 suicide attempts for every single suicide case (Kretschmar & Flannery, 2011).

In many cases, depression is a key influencer in deciding to take one’s own life (CMHA, n.d.-a). One of the most common forms of mental illness is depression. Depression is defined as: “A long period when a person feels very sad to the point of feeling worthless, hopeless and helpless” (CMHA, n.d.-b).

This can usually play out in a child’s behaviour, attitude, and performance at school. The change can be due to a life or situational stressor (i.e. family dysfunction, poverty, personal loss). However, depression can exist independent of any triggers (CMHA, n.d.-b). In a recent study by the Canadian Mental Health Association (2009) socio-economic status was found to be inversely related to hospitalization for depression (p. 6). This means that people living in lower socio-economic situations were much more likely to be hospitalized for depression than those in a higher socio-economic status. It is important to acknowledge this correlation, as many at-risk youth are living in situations of poverty, or low income, which has been shown to influence their mental health. Outside of depression, behavioural disorders are common among young people, often resulting in their alienation from programing and participation.

It has been found that homeless youth display higher rates of mental illness than non-homeless youth. Yet homeless youth are far less likely to seek mental health services (Dixon, Funston, Ryan, & Wilhelm, 2011). This is a pivotal fact which mental health interventions need to explore further. Catering programs and strategies with this group in mind can have a significant impact on improving their mental health.

V. Relevance for CYCC Network Partners

In returning to the purpose of the CYCC Network, it is important to clearly state how this discussion is relevant to the network partners. The purpose of the CYCC Network is to synthesize the knowledge that exists around best practice for working with young people in challenging contexts, and then to mobilize that knowledge in innovative and effective ways. As technology has emerged as a potentially effective means of intervention with young people, it is important that
this report captures the current concepts and practices in this field. This report will discuss what interventions and strategies exist with regard to using technology as a means of intervention and identifying what programs/projects have shown positive outcomes. The lack of evaluation and evidence prevents conclusions around effectiveness, but this discussion is a valuable step in developing the practice-based evidence which can then inform evidence-based practice. The opportunities for network partners to expand their scope of influence to include technology could be an effective development for their program goals and objectives. In the changing landscape of communication and interaction with young people, it would be remiss to not develop our understanding of technologies abilities and limitations.

The next section of this report will discuss interventions and programs directed at children and youth in challenging contexts which promote resilience and positive mental health among these young people.
Section 4: Interventions with Children & Youth in Challenging Contexts using Technology

I. How Programs are Delivered using Technology

The implications for using technology to reach young people are significant. This generation of young people today is the first to never know a world without the World Wide Web and the globalized community that it enables. With this shifting reality comes a change in how young people engage with and understand their environment. Teaching methods in schools, for example, have shifted in how they engage young people with curricula, incorporating more technology in their approaches (Freishtat & Sandlin, 2010). Studies have also shown that both young people with chronic illness and their parents perceive the internet as an opportunity to address their unmet needs for information and support (Stinson et al., 2012). The internet presents an opportunity to provide better healthcare services to young people (Keogh, Rosser, & Eccleston, 2010a). The ability to not just adapt to but utilize the new technology will be critical for those working with young people to provide effective and relevant services and supports.

The internet has revolutionized the way we live our lives (Barak & Grohol, 2011; Bowen, Horvath, & Williams, 2007). It has opened up access to information, contributing to the global community through exposure to differing sources, points of view, and cultures. The internet, like other types of technology, is simply a tool that needs to be explored and utilized for optimal benefit. There is potential for the internet and mobile phone technology to effect social change and encourage sustainable development (Indigo Trust, 2012).

According to the National Centre for Missing & Exploited Children, 93% of American youth aged 12-17 years are online, with 73% having profiles on social networking cites (NCMEC, 2010). The Interactive Advertising Bureau (IAB) of Canada released a report (2010) which estimated that 82% of youth aged 18-24 were exposed to the internet weekly. Communicating online has, in many ways, become the preferred mode of communication for many young people (Leung, 2011), allowing for a unique form of identity experimentation (Eagle, 2007). Information and Communication Technologies (ICT) allow the young person to formulate their perceived identity, as opposed to face-to-face encounters, where such thought and planning is not the same (Leung, 2011). While the internet has expanded rapidly, there is relatively little knowledge about how
adolescents access information online (Bender et al., 2011). According to a report by Gutnick et al. (2011), there is a shift in children’s use of technology around age eight, where young people begin to be exposed to more social media and technology beyond the television (p. 5). This, however, is dependent on the young person’s socio-economic status and access to new technology. They make the argument that not only are young people exposed to increasing technology and media, but they are active consumers of it (Gutnick et al., 2011, p. 7). This is an area which needs further research.

The benefits for using the internet as a means of intervention are the cost-effective (Barak & Grohol, 2011; Downs et al., 2004) and wide-reaching programs that it is able to maintain (Roberto et al., 2007; Stinson et al., 2012; Tian et al., 2007). Such information is easily updated to keep curricula and programing accessible in their most recent forms (Roberto et al., 2007). The rapidly changing nature of the internet requires the regular publishing of reviews to try and capture which interventions in use are most effective (Barak & Grohol, 2011), and what can be learned from them for future projects. Because this technology is relatively new, there is little known about the long-term impact of such interventions (Barak & Grohol, 2011; Hicks, Von Baeyer, & McGrath, 2006).

The fields of tele-health and self-management of healthcare have become increasingly popular over recent years, as they reduce the strain on limited resources of the system (Suter, Suter, & Johnston, 2011). There have been a series of studies and randomized control trials (RCTs) done which suggest that tele-health is a promising option for a variety of chronic conditions (Lingley-Pottie & McGrath, 2008; Martin, Kelly, Kernohan, McCreight, & Nugent, 2009; Ohinmaa, Chatterley, Nguyen, & Jacobs, 2010; Venter, Burns, Hefford, & Ehrenberg, 2012; Witmans et al., 2008). This field is as diverse as it is far-reaching, with numerous programs and health interventions designed and implemented through technology. This has captured the attention of many, including a CNN series called Our Mobile Society (Landau, 2012).

Tele-health also presents an opportunity for developing countries and rural areas within the developed world where access to specialists is limited or even non-existent (Simms, Gibson, & O’Donnell, 2011). Many African countries, for example, have seen an enormous expansion in the use of technology, particularly mobile phones (Ogunlesi & Busari, 2012). This could be a significant benefit to the healthcare services provided in such regions by effectively sharing in-time expertise with local doctors and healthcare providers (Munoz et al., 2012). Also, reaching young people and their families at home, providing timely care, and decreasing the number of trips into a central healthcare facility can benefit all those involved by limiting the stress that might arise from keeping appointments and travel costs (McGrath et al., 2011).

Using computers for program delivery has become increasingly common, as researchers and practitioners are striving to reach young people in the media with which they are familiar (Roberto et al., 2007). Interactive computer-based interventions are being used more and more for health promotion and education programs (Schinke, Schwinn, & O’zanian, 2005) as they try to reach young people with messages that will not only change what they know, but change their behaviour. Such content can take many forms. Online, interventions can take place at crucial moments using internet-based communication technology such as instant messaging and Skype.

The use of websites has been a common tool of many intervention strategies for reaching a wide range of people with information and support. Research exposing how people look for and absorb information has been critical for the effectiveness of these sites, allowing people to navigate the online world in a way that meets their needs (Burns, Davenport, Durkin, Luscombe, & Hickie, 2010). The fact that websites are easily accessible is a positive feature for interventions, as there is
more opportunity to reach people who might otherwise not have access to that support (Burns et al., 2010).

Studies have shown that successful websites for reaching young people have had higher degrees of interactivity (Lou, Zhao, Gao, & Shah, 2006). The idea of the “participative web” (Vickery & Wunsch-Vincent, 2007)—where users are involved in various stages of a website’s development and evaluation—has become increasingly popular, particularly with young people. This popularity has arisen out of the widely acknowledged necessity of youth involvement and participation for successful interventions (Checkoway & Richards-Schuster, 2003; Gurstein, Lovato, & Ross, 2003; Hart, 1992). There is, however, a lack of evaluation using social science research methods to show the positive or negative impacts on young people’s engagement with online interventions (Roberto et al., 2007; B. Wilson, 2006).

There has been a shift in adolescent internet use from web browsing to social networking technologies (e.g., Facebook, Twitter) (Rice, Monro, Barman-Adhikari, & Young, 2010). Social media has changed the way that people communicate, both locally and internationally. Young people are the biggest users of platforms like Facebook and Twitter, which provide virtual forums for interaction. In fact, youth internet use has moved away from web surfing to such social networks (Pempek, Yermolayeva, & Calvert, 2009; Rice et al., 2010). Organizations and government agencies have begun to optimize this mode of communication to reach young people with information and messages designed to promote their well-being and protection (Wenzel, 2012). Robert Fuderich, the United Nations Children’s Fund (UNICEF) representative to Jamaica, is quoted as saying:

If we aren't meeting them where they are speaking their language, we will lose the opportunity to connect with young people on their terms. We will lose some of our best opportunities to engage them. These are the spaces with which we must become more comfortable and develop our competencies to better engage the young people (Mundle, 2012).

The potential of social networking to reach beyond the confines of traditional media is a significant strength. Facebook messages and Twitter tweets allow organizations to reach a far greater audience with messages both promoting healthy behaviours and warning against risky ones (Wenzel, 2012). This has implications for research using social networks such as these, as data is not private but public. There has been a lot of press around privacy issues with Facebook and the protection of users’ personal information, or lack thereof (Ball, 2012; Hamburger, 2012). Security concerns have many worried about the increased vulnerability for young people who are involved in social networking. There are continuing efforts to make social networks safe places for young people to interact (Denmead, 2009; Facebook, 2012). This is critical for these social networks to optimize their potential for serving to promote and protect the well-being of young people online. The success of these networks is rooted in their ability to persuade their users to engage and participate in its functions—for example, to post photos, send messages, and add friends (Fogg, n.d.). In looking at these platforms as tools to be utilized, it is important explore what about them actually motivates users (Fogg, n.d.).

It would, however, be a mistake to see the social network as a neutral space without racial or social divisions. This is seen in the types of social media that people engage with. In the United States, for example, 30% of Twitter users are Latino, while 90% of tumblr.com are Asian-American (Danzico, 2012). Such media are not without negative components. This shift in communication
style has been criticized for contributing to shorter attention spans and young people’s tendency to prefer virtual relationships over face-to-face ones (Dimitrov, 2010). There are also concerns about the safety of youth in such online forums (Wells & Mitchell, 2008; Ybarra & Mitchell, 2005), as exposure to sexual predators or inappropriate content could negatively affect their well-being and promote risky behaviours (Rice et al., 2010). Using social networking as a medium of intervention still needs further research to develop an evidence base for employing this strategy.

The use of computer software (such as CD-ROMs) is also widely used (Schinke et al., 2005), though often for a target group of whom all have access to it. Because of this vehicle, an intervention using specific software that requires a payment for downloading is more limited in the audience it can reach. One example was a program launched in New York City with the purpose of preventing alcohol abuse among at-risk youth (Schinke et al., 2005). In this program, called Thinking Not Drinking: A SODAS City Adventure, sessions cover goal setting, peer pressure, decision making and communication skills (Schinke et al., 2005). These young people, as compared to those who didn’t participate in the program, had a “positive increase in perceived harm of alcohol abuse and increased assertiveness skills” (Schinke et al., 2005).

Video games have been presented as an opportunity to communicate with young people about sensitive issues which they might not deal with in another setting (Biddiss & Irwin, 2010; Rushing & Nicole, 2010). For example, mental health interventions have been shown to be beneficial in reaching young people with treatment and information (Merry et al., 2012). Young people’s familiarity with this technology creates a space for promoting messages of health and positive behaviours (Mikulec, Moreno, Carrel, & Allen, 2010). Promoting the use of video games as a means of intervention is an effort to reach young people in a way which they are receptive. It is important to keep this concern in mind in the planning and design of interventions. It is important, though, to acknowledge the issue of young people spending long durations playing video games (amongst other screen time) in the place of being active, which is a negative health determinant (Foley & Maddison, 2010).

While video games are a place to have fun, such games can be designed to provide young people with learning opportunities in a context with which they are comfortable (Kiili, 2005). In the context of healthcare services, gaming has been used in various capacities—whether to communicate positive health messages or to actively address and treat illness (Levi, 2012). Evaluation is needed to explore how well virtual reality technology can work towards these goals.

Mobile phones have significantly contributed to the dramatic change in communication over the past decade. There are approximately 4.6 billion mobile phone plans in the world today (CBS News, 2010). This makes mobile phones the most widespread technology on the planet, with the potential of being the world’s “first ubiquitous communication platform” (Mobile4Good | OneWorld, n.d.). Their relatively low cost makes common use more of a reality. In Africa, for example, there are estimated to be 450 million mobile phones—that’s nearly one phone for every two people (Praekelt Foundation, n.d.). The digital divide (Schinke et al., 2005) has been decreasing, creating a space for utilizing mobile phones to reach an expansive, diverse group of people.

With increased access comes increased opportunity for the impact of interventions using mobile phones. The benefits to healthcare, for example, are distinct, particularly in rural areas as well as developing countries, where proximity to healthcare services is an issue. Examples of what this looks like in practice will be presented later in this section. In a recent CNN series (2012) it was presented that mobile phones will play an “important role in mediating the provision of better healthcare” to citizens in many African nations (Ogunlesi & Busari, 2012). In South Africa, for
example, there is the program Impilo, a service that helps people to find healthcare providers anywhere in the country 24 hours a day using their mobile phones (Ogunlesi & Busari, 2012). Programs like Impilo are becoming increasingly common.

Mobile interventions can include a range of functions, including website components that can contribute to information sharing (Benjamin A. Rosser & Eccleston, 2011). The opportunity for creative thinking and design in the field is huge in scope. An example of a creative use of mobile technology is Mobile Voices (also called VozMob), a platform for “low-wage immigrants in Los Angeles to publish stories about their lives and their communities directly from their mobile phones” (Bar, Costanza-Chock, Anorve, & Garces, 2010; Lapsansky, 2011). With limited access to computers, developing an accessible, virtual space was critical to achieving the goals of the VozMob project. This is just one example of the creative potential inherent to this technological tool.

The use of SMS (short messaging service)—also referred to as texting—has been a more recent utilization of a mobile technology as an intervention. These messages can take different forms, and require varying degrees of interactivity. Reminder or tracking messages are quite common. For example, using SMS to remind patients with HIV to take their antiretroviral treatment (Dowshen, Kuhns, Johnson, Holoyda, & Garofalo, 2011; Horvath, Azman, Kennedy, & Rutherford, 2012; Lester et al., 2010). Such programs have shown to be beneficial, but there is a need for more studies to show the effect of this type of intervention on improving treatment adherence (Dowshen et al., 2011).

The development of mobile applications (commonly referred to as apps) is one of the most popular, fastest developing fields in technology today (Rosser & Eccleston, 2011). In 2011, the number of apps downloaded globally was approximately 29 billion, up from 9 billion in 2010 (mobiThinking, 2012). Apps are “downloadable programs designed to run on smartphone operating systems” (Rosser & Eccleston, 2011). The limitation of most apps is that they are device specific, often designed for a particular brand or type of phone (such as an iPhone, a Blackberry, or an Android). There is a need for the interoperability of such apps used for interventions in order to reach a wider audience.

There is potential for mobile phone apps to contribute to development across sectors by “increasing access to information, aiding communication and enhancing choice” (Indigo Trust, 2012). Mobile health or mHealth—the use of mobile technologies for health—has received a lot of interest for a variety of healthcare concerns (De Costa et al., 2010; Earth Institute, 2010). With the proliferation of mobile phones in low income settings, designing mobile apps which can assist in the delivery of healthcare has the potential to provide more effective services to the population (De Costa et al., 2010). There have been a series of apps developed and launched through sites such as iTunes that address various health concerns, from headaches to stress to tracking your healthcare.

However, the field of mHealth is at risk of not fulfilling its potential due to “small-scale implementations and pilot projects with limited reach” which characterize this field (Earth Institute, 2010; Rio+20: mHealth, 2012). One of the issues arising from this use of apps, particularly for healthcare advice or services, is the lack of regulation. The validity and reliability of such interventions is largely unknown (Rosser & Eccleston, 2011). As the use of apps for health continue to develop, so should a regulation scheme that can ensure that they are safe and effective.
II. Types of Services Delivered

a. Social Support

A unique feature of technology is its ability to reach people both in time and space that might not otherwise receive the support they need. For youth struggling with issues from depression to drug-use to relationship, help can be as close as an instant message to a councillor or clicking on a link to valuable information that can help them make decisions that will positively impact their well-being.

MYMsta—an initiative of LoveLife—is a mobile-based social network directed specifically at young people in South Africa. MYMsta functions as a network within the larger MXIT, which is the largest social network in Africa that runs on most mobile handsets (Mxit, n.d.) This is an effective means of reaching young people in South Africa, as approximately 75% of 17-25 year olds have a mobile phone (LoveLife, n.d.). By registering with MYMsta, youth can access information about a variety of topics from employment opportunities to HIV to workplace skills. There is also a trained counselor online—named Mizz B—to whom the youth can send questions about their sexual health concerns and receive timely responses (LoveLife, n.d.). MYMsta has proven successful with the youth in South Africa, with thousands of members subscribed even within the first couple months of the project (dotMobi, 2012).

The Jack Project is another example of how the telephone can be used to reach young people with mental health illness. The Jack Project at Kids Help Phone promotes youth mental health and well-being in Canada, with a particular focus on supporting youth during the transition years between high school and university (The Jack Project at Kids Help Phone, n.d.). Of those who struggle with mental illness, only a small percentage actually come forward for treatment. Initiatives like The Jack Project work to overcome those barriers to reach young people with the support and resources they need to sustain healthy lives (Catania et al., 2011; The Jack Project at Kids Help Phone, n.d.).

Another example is Zumbido—a project developed by the SHM Foundation. Zumbido was launched in Mexico using mobile phones to create a social support network between people living with HIV/AIDS through group SMS (SHM, n.d.). Often people living with HIV are faced with social stigma and isolation because of their condition. By setting up a group SMS, the participants were able to communicate with each other about a variety of things, from encouragement to sharing tips on which dentist offices would treat people with HIV. The Director of SHM Foundation and co-founder of Zumbido, Anna Kydd, spoke about the sense of community that was developed in spite of the group never meeting in person. Often people were more open with their concerns and feelings in a virtual space than in an in-person meeting. While the cost of Zumbido was not sustainable, SHM has launched similar programs in South Africa and the United Kingdom.

b. Education

The use of technology to disseminate education programs has widened the range and scope of who can be reached with information and support. According to Martinez and Shilling (2010) “the role of technology in our classrooms is to support the new teaching paradigm” (p. 53). As access to information has become easier for students outside of the classroom, the approach that educators take in the classroom needs to reflect this shift. Learning how to effectively use technology can be of benefit both inside the classroom as well as in less conventional spaces (Martinez & Schilling, 2010).
Often sensitive topics, such as sexual health and mental illness, can be difficult to communicate in person. *Teen Mental Health* is an example of how an interactive website can be used to reach young people with mental health support and resources they need. Begun by Dr. Stan Kutcher, Sun Life Financial Chair in Adolescent Mental Health at the IWK Health Centre in Halifax, Teen Mental Health provides resources for health care providers, policymakers, schools, the business community, non-profit organizations, and the general public (Kutcher, 2012). The focus on effective knowledge translation is a strength of this website, as particular attention has been paid to bringing together “scientific evidence with user needs” (Kutcher, 2012).

An example is the Digital Story Telling project in Rigolet, Labrador named *My Word*. This project was initiated by a research project that was funded by Health Canada’s First Nations and Inuit Health Branch (FNIHB). The purpose of the project was to “further develop individual and collective capacities in Rigolet to understand, identify, adapt to and manage health issues experienced in the community due to changes in climate using digital storytelling methodologies” (“Digital Storytelling: Rigolet, Labrador,” 2012). The project was a community led initiative, where young people were given five days of training on the technology, and then were able to create videos of themselves telling their stories. They were able to be as creative as they liked, using any pictures and music they wanted.

As a result of its success, the Rigolet Inuit Community Government has provided funding for the “Storytelling and Digital Media lab, providing an ongoing opportunity for community-based participatory media. The purpose of this project was to preserve and promote oral storytelling, which is intrinsic in the Inuit community. Ashlee Cunsolo Willox, one of the primary investigators on the research project, suggested that the reason My Word was so well received in Rigolet was that there was a sense of community ownership of the project. It was their stories, told in their way, and they played a part in preparing the digital footage. This suggests that there is real value in truly participatory research in affecting sustainable benefits to a community.

The use of virtual realities—computer-generated imagery-based systems—has only just started to be used, largely as a distraction for those suffering with chronic pain (Keogh, Rosser, & Eccleston, 2010b). There is need for further research with virtual realities, though the limitations of cost and usability present practical issues for implementing such systems (Dahlquist et al., 2009; Keogh et al., 2010b; Morris, Louw, & Grimmer-Somers, 2009). One example of an intervention using virtual reality technology is the “On the Path of the Elders” website. This website is intended to teach young Aboriginal young people, particularly from the Cree nation, through the story of the Mushkegowuk and Anishinaabe Peoples of North-Eastern and North-Western Ontario, Canada and the signing of the James Bay Treaty (Treaty 9) (“Path of The Elders,” 2010). The site provides content suitable for students in grades 4-10. The goal of On the Path of the Elders is to share the knowledge of the elders with the younger generations in a way which is relatable and interactive. The use of virtual realities to reach teach young people about their history has the potential to promote pride in their cultural identity.

c. Violence Prevention

Using technology as a means of preventing violence has come into the spotlight in the last few years. Various initiatives and programs using mobile technologies, website, and many other media have targeted audiences with both messages of non-violence and support for those encountering violence (see the table for examples of such programs). In a series done by CNN (2012) on the impact of mobile technology, they presented different examples of how organizations are using
technology in this way. One example they used was the organization “RefugeesUnited,” which uses both computers and mobile phones in refugee camps to create a database of displaced persons, with the goal of facilitating family reunification in a more effective way (Ogunlesi & Busari, 2012).

An example of a standard application on most mobile phones is a GPS (global positioning system). Using a technique called POI Mapping (point of interest), mobile owners are able to use a GPS to map different points of interest which can be accessed both by themselves and other members of the community. An example of this being used with at-risk youth is in Thailand with the Child Protection Project (CPP), in partnership with the International Institute for Child Rights and Development (IICRD). Using their mobile phones, refugee children and youth contributed to a social mapping project where they were able to indicate safe places, risky places, and where they go for different services or support in their city by placing a point on a Google map. The points from all of the young people were compiled into an online map that they could all access and update as needed. This is an example of how technology can be used to prevent violence and promote safety among children and youth in challenging contexts.

Another example is A-CHESS (Addiction Comprehensive Health Enhancement Support System) developed by the Center for Health Enhancement Systems Studies (CHESS) at the University of Wisconsin. This app, whose main feature is a panic button, “allows recovering addicts to track their progress, recall their own motivational story in moments of crisis, communicate almost near instantly with counselors and their support team while taking advantage of ubiquitous smart phone capabilities such as GPS and video chat” (Isham, 2011). With children and youth in challenging contexts being at higher risk of substance abuse, this app could help facilitate and sustain their recoveries.

In the United States, there is an annual Apps against Abuse challenge, where various apps are submitted, all with a focus on preventing violence. One of the winners in 2011 was “Circle of 6,” an app that allows the user to store six people’s contact information—all people whom they trust and feel they can turn to. If ever a person is in a compromising situation and needs help, such as a ride home, they can select this app and an automatic message goes out to their group of six along with their GPS location. It currently runs on the iPhone but there are plans to make it available on multiple devices (Carlson, 2012).

An example of using a website as an intervention would be RespectED. RespectED: Violence and Abuse Prevention is a program of the Canadian Red Cross which aims to create safe environments free of violence and abuse, especially for children and youth. This program offers a variety of online resources, webinars, and training for both adults and young people. Education resources for preventing bullying, child abuse, and promoting healthy relationships are just a few of the projects of RespectED (PHAC, 2012). Through its online learning centre, individuals can access these resources and receive interactive prevention education (CRC, 2009, 2012).

d. Health Treatment & Intervention

As discussed above, the potential for improved healthcare services through the use of technological innovations is significant. Mental health interventions, for example, have become increasingly popular online (Mobilizing Minds, n.d., Teen Mental Health, n.d., Youth Space, n.d.).

Mindyourmind is an example of how technology, social media and digital tools can be used as a means of reaching young people with mental health concerns. Mindyourmind engages youth, emerging adults, and the professionals who serve them to co-develop mental health resources. These resources are designed to reduce the stigma associated with mental illness and increase
Using Technology to Provide Support to Children and Youth in Challenging Contests

access and use of community support, both professional and peer-based. Through the use of active engagement, co-creation processes, best evidence and technology, mindyourmind inspires young people to reach out, get help, and give help.

As a program, mindyourmind determined that in order to maximize reach they needed to be accessible online, including via social networking sites and mobile platforms. Many of the tools and resources are interactive, delivered in varying formats with special consideration given to natural language text. Tools and content are often rooted within the context of youth culture and created with youth and content experts. Interactive tools are also designed to be used independently and/or to act as a bridge between the service provider and the youth. Mindyourmind.ca is an “award-winning innovative service whose primary function is to encourage help-seeking behaviour and early intervention, helping young people develop positive strategies for seeking help and coping. By reducing stigma and [by increasing] access to mental health services and support, mindyourmind works to support the positive development and well-being of Canadian youth” (Garinger, 2010; MYM, n.d.).

Providing information and resources in a non-confrontational space has proven to be a positive strategy with young people (Christensen & Griffiths, 2000). Youth have reported feeling empowered by this access to information (Burns et al., 2010; Nicholas, Oliver, Lee, & O’Brien, 2004). It is important to note that online interventions are not meant to replace face to face interaction with healthcare providers, but to provide an opening to in-person help as well as support (Barak & Grohol, 2011).

Strongest Families Institute is an example of a telephone-based intervention program. Begun at the IWK Health Centre, Strongest Families uses trained coaches to work with children and families over the phone at times that are convenient for the families (IWK, n.d.). Strongest Families has proven to be an effective intervention for treating mild to moderate mental health issues, with benefits even surpassing that of usual, in-person care (McGrath et al., 2011). There was very positive feedback from the parents involved, particularly with regard to their telephone coach (McGrath et al., 2011).

An example of how gaming can be used as an intervention is SPARX. SPARX (Smart, Positive, Active, Realistic, X-factor thoughts) is a self-help computer game for young people with symptoms of depression (SPARX, 2012). The program is delivered on a CD-ROM and is designed for a PC. Within the game, young people learn cognitive behavioural therapy techniques for dealing with symptoms of depression (SPARX, 2012). An evaluation published in the British Journal of Medicine, found that SPARX was an “effective resource for adolescents with depressive symptoms” (Merry et al., 2012), with the hopes of reaching young people with treatment who might otherwise not engage with conventional therapy (Fiore, 2012; Merry et al., 2012).

e. Monitoring & Evaluation

The monitoring and evaluation of programs and interventions are critically important to their overall effectiveness (Hicks et al., 2006). What technology allows for is access to detailed, in-time information from participants regardless of their geographic locations. E-diaries are a frequently used technique, particularly for self-management of healthcare (Hicks et al., 2006). Through the internet, e-diaries are used to track symptoms and medications as well as to record thoughts and feelings. The interface for these diaries can be accessed through both computers and mobile phones. For example, the e-Ouch® electronic diary for adolescents living with juvenile idiopathic arthritis has received positive responses from users for its usability and relevance (Stinson et al.,
This format has advantages over traditional pen and paper diaries, providing easy access for the patient as well as timely information to the healthcare provider.

Unlike the other forms of technology cited in this report, there have been quantitative evaluations published on the effectiveness of e-diaries, particularly in the area of pain management (Stinson et al., 2006; Stinson et al., 2012; Stinson et al., 2008). Dr. Stinson’s work at The Hospital for Sick Children in Toronto (SickKids), in collaboration with other children’s hospitals across the country, has shown the positive impact of this intervention. E-Diaries has proven to be an effective way for patients to receive improved services, allowing for increased access to healthcare support (Stinson, Feldman, et al., 2012).

One example, developed at the Centre for Research and Family Health at the IWK Health Centre, is an iPhone app for severe headache sufferers. Coined the “Wireless Headache Intervention,” this app allows users to keep a diary of their headaches by tracking relevant information (e.g., diet, sleeping schedule) (Wooler, 2012).

Another example of a mHealth app is the DSS (Decision Support System). By using an accelerometer and GPS on a smart phone, the DSS can track activity as well as location for people living with chronic illness (Zheng et al., 2010). This type of self-management allows for more home-based care, while still having a condition monitored.
III. Table of Interventions

<table>
<thead>
<tr>
<th>Name</th>
<th>Where is it Implemented?</th>
<th>Reference</th>
<th>Type of Intervention</th>
<th>Target/ Focus</th>
<th>Description</th>
<th>Pilot vs. Established</th>
<th>Support for Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATAS Model (Telecare self-management support model)</td>
<td>Santiago, Chile</td>
<td>(Lange et al., 2010)</td>
<td>Mobile phone: telephone-based self-management (coordinated by primary care centre)</td>
<td>Type 2 Diabetes</td>
<td>Telephone interventions are used to help stabilize metabolic control in patients.</td>
<td>Pilot</td>
<td>EBP</td>
</tr>
<tr>
<td>Beating the Blues</td>
<td>UK</td>
<td>-</td>
<td>Internet: interactive website</td>
<td>Depression</td>
<td>Beating the Blues® is an effective treatment for people feeling stressed, depressed, anxious, or just down in the dumps (eight online sessions).</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>Breathe2Relax</td>
<td>Global</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>Stress</td>
<td>Breathe2Relax is a portable stress management tool that provides detailed information on the effects of stress on the body. It includes instructions and practice exercises to help users learn the stress management skill called diaphragmatic breathing.</td>
<td>Established</td>
<td>-</td>
</tr>
<tr>
<td>Alcohol abuse prevention among high-risk youth: computer-based intervention</td>
<td>New York</td>
<td>(Schinke et al., 2005)</td>
<td>CD-ROM</td>
<td>At risk Youth; homeless</td>
<td>This is an alcohol abuse prevention 10-session intervention in community centres in NYC. The study showed post-test positive change in attitude about drinking.</td>
<td>Pilot</td>
<td>EBP- RCT</td>
</tr>
<tr>
<td>Name</td>
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<tr>
<td>Cell-Life</td>
<td>South Africa</td>
<td>-</td>
<td></td>
<td>Mobile phones, HIV+</td>
<td></td>
<td>Initiatives of Cell-Life: iDART is a software solution designed to support the dispensing of antiretroviral drugs in the public health care sector, and communicates using mobile technology. This product previously fell under the banner of “Cellphones for HIV,” and was known as Mobilisr. Capture is a mobile data collection system that allows fieldworkers to fill in forms on their cellphones from any location.</td>
<td>Established</td>
</tr>
<tr>
<td>Cell-PREVEN</td>
<td>Peru</td>
<td>-</td>
<td></td>
<td>Mobile phone: SMS &amp; email using cellphones</td>
<td>Those receiving treatment for STDs</td>
<td>Cell-PREVEN is part of large randomized trial in Peru in 20 cities called PREVEN which seeks to lower STD rates in Peru. Cell-PREVEN is an interactive-computer system using cell phones and the internet for real-time collection and transmission of adverse events related to metronidazole administration as presumptive treatment for vaginosis among FSW in Peru. Goal: to stop the spread of STDs and HIV using public health surveillance system and real-time reporting of treatment and adverse events.</td>
<td>Established</td>
</tr>
<tr>
<td>Circle of 6</td>
<td>USA</td>
<td>-</td>
<td></td>
<td>Mobile Phone: Smart app</td>
<td>Girls at risk of sexual assault</td>
<td>Using the free app, people can choose six friends they trust to be in their circle. Among its functions, users can press a button, which sends a preprogramed text message to their friends. For example, one choice sends a message that the person needs a safe way to get home, along with his or her location.</td>
<td>Established</td>
</tr>
<tr>
<td>Computer-based program- Study</td>
<td>Ohio</td>
<td>Roberto, Zimmerman, Carlyle, Abner, (2007)</td>
<td>Computer-based</td>
<td>Rural Adolescents</td>
<td></td>
<td>A computer-based intervention was designed to change perceived threats, perceived efficacy, attitudes, and knowledge regarding pregnancy, STD, and HIV prevention in rural adolescents.</td>
<td>Established</td>
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<tr>
<td>Name</td>
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<tr>
<td>Digital Drum</td>
<td>Uganda</td>
<td>-</td>
<td>Computer-based</td>
<td>Rural communities</td>
<td>The Digital Drum is a solar-powered computer kiosk made out of rugged, locally available materials. An eye-catching combination of industrial simplicity and modern technology, it aims to change the lives of millions of people in rural areas.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Distance Treatment:</td>
<td>Canada</td>
<td>(Hicks et al., 2006)</td>
<td>Telephone &amp; internet</td>
<td>Chronic Pain</td>
<td>This is a web-based manual for children and their families, as well as a weekly phone call or email from therapist.</td>
<td>Pilot</td>
<td>EBP</td>
</tr>
<tr>
<td>Pediatric recurrent</td>
<td></td>
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<tr>
<td>pain</td>
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<tr>
<td>Down your Drink</td>
<td>UK</td>
<td>-</td>
<td>Internet: interactive website</td>
<td>At risk for substance abuse</td>
<td>This site is designed to help you determine whether you're drinking too much, and if so, what you can do about it.</td>
<td>Yes</td>
<td>EBP</td>
</tr>
<tr>
<td>e-Ouch: Electronic</td>
<td>Canada</td>
<td>(Stinson et al., 2006)</td>
<td>Electronic Diary</td>
<td>Chronic Pain-arthritis</td>
<td>The electronic pain diary employs a personal digital assistant (PDA) that uses methods for real-time data capture (RTDC) having the potential to maximize the compliance, validity, and reliability of pain assessment data. (However, there has been no published research evaluating the usability of electronic pain diaries in children or adolescents).</td>
<td>Established</td>
<td>EBP -evaluation</td>
</tr>
<tr>
<td>Pain Diary</td>
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<tr>
<td>Factor Track</td>
<td>USA</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>Hemophilia A - those on a prophylaxis regimen</td>
<td>FactorTrack™ is a personal, interactive application designed by Bayer HealthCare to help make it easier to track and record your hemophilia A factor VIII infusions. For those on a prophylaxis regimen, it also offers you a reminder system to help make it easier to remember when to infuse.</td>
<td>Established</td>
<td>-</td>
</tr>
<tr>
<td>Fear Fighter</td>
<td>UK</td>
<td>-</td>
<td>Internet: interactive website</td>
<td>Panic &amp; phobia</td>
<td>The FearFighter™ Treatment is the only product endorsed by a national regulator (NICE in the UK – TA097) for an Anxiety Treatment.</td>
<td>Established</td>
<td>EBP</td>
</tr>
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<tr>
<td>FITNET</td>
<td>Netherlands</td>
<td>(Nijhof, Bleijenberg, Uiterwaal, Kimpen, &amp; Van de Putte, 2011)</td>
<td>Computer based: Internet</td>
<td>Chronic fatigue syndrome</td>
<td>Fatigue In Teenagers was developed on the interNET (FITNET) and was the first dedicated internet-based therapeutic program for adolescents with this disorder. We compared its effectiveness with that of usual care.</td>
<td>Established</td>
<td>EBP -evaluation: randomized control trial</td>
</tr>
<tr>
<td>Text Message Reminders to Improve Adherence to Antiretroviral Therapy for HIV-Positive Youth</td>
<td>New York</td>
<td>(Dowshen et al., 2011)</td>
<td>Mobile phone: SMS</td>
<td>At risk youth</td>
<td>This is a computer-mediated intervention, relative to no intervention, in altering HIV/AIDS-related knowledge, protective attitudes, and self-efficacy for risk reduction among early adolescent females aged 11 through 14 years.</td>
<td>Pilot</td>
<td>EBP -Evaluation</td>
</tr>
<tr>
<td>iCouch</td>
<td>Global</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>Cognitive Behavioral Therapy</td>
<td>The iCouch CBT app makes it easy to keep track of your thinking, analyze your emotions, and change your outlook via your smart phone.</td>
<td>Established</td>
<td>-</td>
</tr>
<tr>
<td>iHeadache</td>
<td>Global</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>Pain-Headache</td>
<td>One of the unique features of iHeadache is that it can tell you the type of headache you’re having by capturing and analyzing real time information. The app uses the International Headache Society Criteria (IHS Criteria) to classify your headache as a migraine, probable migraine, tension headache, or unclassified headache. This application is like having a doctor in your device.</td>
<td>Established</td>
<td>-</td>
</tr>
<tr>
<td>Imagery for Kids</td>
<td>Los Angeles, USA</td>
<td>-</td>
<td>Computer-based: software</td>
<td>Youth</td>
<td>This highly insightful program of guided and interactive imagery - enhanced by music, relaxation techniques, drawing, and journal writing - can help all children achieve their highest learning potential, develop self-esteem, heal internal conflicts, and reduce overall stress.</td>
<td>Established</td>
<td>EBP</td>
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<tr>
<td>Interactive Video Intervention</td>
<td>Pittsburg, USA</td>
<td>(Downs et al., 2004)</td>
<td>Video</td>
<td>Adolescent girls</td>
<td>Interactive video intervention used with young girls to educate about STDs. The video is interactive in two ways: users select which sections to watch and how each proceeds.</td>
<td>?</td>
<td>EBP -evaluation: longitudinal randomized design</td>
</tr>
<tr>
<td>Keeping it Safe</td>
<td>New York</td>
<td>(Di Noia, Schinke, Pena, &amp; Schwin 2004)</td>
<td>Pain interventions</td>
<td>Adolescent girls</td>
<td>Designed to increase HIV/AIDS knowledge, protective attitudes (peer norms, partner norms, and attitudes toward sexually active youths), and risk reduction self-efficacy among early adolescent girls, Keeping It Safe incorporates strategies proven effective for altering these outcomes.</td>
<td>Pilot</td>
<td>PBE -evaluation: randomized blocks design</td>
</tr>
<tr>
<td>Kids Help Phone</td>
<td>Canada</td>
<td>-</td>
<td>Telephone &amp; Email</td>
<td>Youth</td>
<td>Kids Help Phone is a free, anonymous and confidential phone and on-line professional counseling service for youth. Big or small concerns. 24/7. 365 days a year</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>La Ligne Verte</td>
<td>DRC</td>
<td>-</td>
<td>Telephone hotline</td>
<td>Family Planning</td>
<td>Cell phone hotline that spread family planning</td>
<td>??</td>
<td>PBE- Pilot</td>
</tr>
<tr>
<td>Name</td>
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<tr>
<td>loveLife’s MYMsta</td>
<td>South Africa</td>
<td>-</td>
<td>Mobile phone &amp; computer: social network</td>
<td>Youth</td>
<td>MYMsta is loveLife’s revolutionary mobile-based social network that is more than just a chat site. It offers users the chance to define their identity by creating personal profiles with photos, video and text; it helps them to develop a sense of belonging and community by connecting to like-minded individuals through forums, groups, and messaging; and engenders a sense of purpose among users by exposing them to a world of opportunities. By registering with MYMsta, young people are able to access information about HIV, workplace skills, bursary information, as well employment and volunteer opportunities. Users are also able to send their sexual health concerns to Mizz B and have a trained counselor respond to their questions within 48 hours.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>MindyourMind</td>
<td>Canada</td>
<td>-</td>
<td>Online</td>
<td>Youth; mental illness</td>
<td>The website is an award-winning innovative service that incorporates pillars of youth culture such as music, celebrity profiles, storytelling, interactive gaming and video to engage youth in developing help-seeking behaviour, disseminate accurate mental health information, provide crisis referral information, and early intervention in the form of strategies and tools for coping and accessing support and services.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>mindyourmood</td>
<td>Canada</td>
<td>-</td>
<td>Mobile app</td>
<td>Youth</td>
<td>Developed by the award winning mental health and youth engagement initiative mindyourmind for the AstraZeneca Young Health Program, the mood tracking app provides young people with an intuitive platform to quickly record how they feel - from day to day or hour to hour. App users can capture how they feel and discuss it with their caregiver - be it their therapist, doctor, parent or peer - creating a shared language that</td>
<td>Pilot</td>
<td>EBP</td>
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<tr>
<td>Mobile for Reproductive Health (m4RH)</td>
<td>East Africa</td>
<td>-</td>
<td>Mobile phone: SMS</td>
<td>Family Planning</td>
<td>The m4RH service provides information on long- and short-acting family planning methods including: implants, IUDs, permanent methods, injectables, oral contraceptive pills, emergency contraception, condoms and natural methods including LAM. The messages address side effects, method effectiveness, duration of use and ability to return to fertility. The service also lists local clinics in a database that is searchable by Province (Kenya) or Ward (Tanzania).</td>
<td>Yes</td>
<td>EBP (WHO study)</td>
</tr>
<tr>
<td>Mobile Phone reminders for people with HIV to take their ART treatments</td>
<td>India</td>
<td>(De Costa et al., 2010)</td>
<td>Mobile Phone: SMS reminders</td>
<td>HIV+</td>
<td>The control arm will receive the standard of care; the intervention arm will receive the standard of care plus mobile phone reminders. Each reminder will take the form of an automated call and a picture message. Reminders will be delivered once a week, at a time chosen by the patient.</td>
<td>Established</td>
<td>PBE - evaluation: randomized control trial</td>
</tr>
<tr>
<td>Mobile phones- self-management of pain</td>
<td>Norway</td>
<td>(Ölöf, Egil, Erlend, &amp; Arnstein, 2011)</td>
<td>Mobile Phone &amp; Internet: logging progress</td>
<td>Chronic Pain</td>
<td>The intervention included daily online entries and individualized written feedback, grounded in a mindfulness-based cognitive behavioral approach. The participants registered activities, emotions and pain cognitions three times daily using the mobile device; monitored by therapist</td>
<td>Pilot</td>
<td>EBP - Pretrial</td>
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can lead to more positive interactions and results.
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<tr>
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<tbody>
<tr>
<td>Mobile Voice</td>
<td>Los Angeles, USA</td>
<td>University of Southern California &amp; Instituto de Educacion Popular del Sur de California (IDEPSCA)</td>
<td>Mobile phone</td>
<td>Immigrant</td>
<td>Mobile Voices is an academic-community partnership to research and design a platform for low-wage immigrants in LA to publish stories about their lives and their communities directly from their mobile phones.</td>
<td>Established</td>
<td>EBP=Evidence-Based Practice PBE=Practice-Based Evidence</td>
</tr>
<tr>
<td>Mobile4Good (M4G)-Learning about living app</td>
<td>Nigeria</td>
<td>-</td>
<td>Mobile phone: interactive SMS</td>
<td>At risk youth</td>
<td>Mobile4Good (M4G) is the overarching name for OneWorld UK's range of mobile applications. 'Learning about Living' application, piloted in 2007, brings expert answers to urgent questions raised by tens of thousands of young people in Nigeria about HIV-AIDS and other aspects of sexual health and gender equity – questions each young person finds easier to ask within the privacy afforded by confidential SMS texts.</td>
<td>Established</td>
<td>PBE=Practice-Based Evidence</td>
</tr>
<tr>
<td>Mobiletype (Mobile Tracking Young People's Experiences) Program</td>
<td>Australia</td>
<td>(Reid et al., 2011)</td>
<td>Mobile Phone</td>
<td>Mental health</td>
<td>The Mobiletype program monitors a young person’s mood, stress, coping strategies and daily activities a number of times per day, and their eating, sleeping, exercise patterns, and alcohol and cannabis use once per day. This information is then uploaded to GPs, via a secure website and displayed in summary reports for review</td>
<td>Established</td>
<td>EBP=Evidence-Based Practice</td>
</tr>
<tr>
<td>MoodGYM</td>
<td>Australia</td>
<td>Centre for Mental Health Research, Australian National University</td>
<td>Internet: interactive website</td>
<td>Depression</td>
<td>MoodGYM is an innovative, interactive web program designed to prevent depression. It consists of five modules, an interactive game, anxiety and depression assessments, downloadable relaxation audio, a workbook, and feedback assessment.</td>
<td>Established</td>
<td>EBP=Evidence-Based Practice</td>
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<tr>
<td>MoTech</td>
<td>Ghana</td>
<td>-</td>
<td>Mobile Phone: SMS or voice messages</td>
<td>Pregnant girls &amp; their families</td>
<td>This service enables pregnant women and their families to receive SMS or voice messages that provide time-specific information about their pregnancy each week in their own language. This includes reminders and actionable and educational information.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Multimedia mobile phone smoking cessation intervention</td>
<td>New Zealand</td>
<td>(Whittaker et al., 2008)</td>
<td>Mobile phone: video and text SMS</td>
<td>Youth: smoking cessation</td>
<td>Goal: to develop and pilot test a youth-oriented multimedia smoking cessation intervention delivered solely by mobile phone. A pilot study using an abbreviated 4-week program of video and text content tested the reliability of the systems and the acceptability of the intervention.</td>
<td>Pilot</td>
<td>PBE</td>
</tr>
<tr>
<td>Online Chronic Pain Management program</td>
<td>USA</td>
<td>(Ruehlman et al., 2011)</td>
<td>Internet-interactive website</td>
<td>Chronic Pain</td>
<td>A comprehensive, fully self-directed and self-paced system that integrates social networking features and self-management tools into an interactive learning environment.</td>
<td>Established</td>
<td>EBP -evaluation: comprehensive assessment</td>
</tr>
<tr>
<td>Panic Button</td>
<td>USA</td>
<td>-</td>
<td>Mobile Phone: smart app</td>
<td>Youth at risk for alcohol abuse</td>
<td>They developed a mobile application that allows recovering addicts to track their progress, recall their own motivational story in moments of crisis, communicate almost near instantly with counselors and their support team while taking advantage of ubiquitous smart phone capabilities such as GPS and video chat.</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>Poi Mapping</td>
<td>Thailand</td>
<td>(Nelems &amp; Currie, 2012)</td>
<td>Mobile phones: smart phone app</td>
<td>Refugee children and youth</td>
<td>A smart phone app combining GPS, photos, audio and text messaging. Using mobile phones in social mapping project. Refugee C&amp;Y living in city in Thailand- able to indicate safe places, risky places, where they go for different services; monitors child protection programs and services -creating an online database</td>
<td>Pilot</td>
<td>PBE</td>
</tr>
<tr>
<td>Name</td>
<td>Where is it Implemented?</td>
<td>Reference</td>
<td>Type of Intervention</td>
<td>Target/ Focus</td>
<td>Description</td>
<td>Pilot vs. Established</td>
<td>Support for Effectiveness</td>
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<tr>
<td>Praekelt Foundation: Txt Alert</td>
<td>South Africa</td>
<td>-</td>
<td>Mobile Phone: SMS reminders</td>
<td>Chronic Illness (medication reminder)</td>
<td>It sends automated, personalized SMS reminders to patients on chronic medication. Apart from notifying patients of their upcoming appointments, TxtAlert also allows patients to reschedule their appointments if they are unable to attend, or if they've missed an appointment.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Praekelt Foundation: Youth Africa Live</td>
<td>South Africa</td>
<td>-</td>
<td>Mobile Phone</td>
<td>Youth</td>
<td>A platform that would not simply state the facts and &quot;lecture&quot; young people about the do's and don'ts, but rather create a space where young South Africans could talk about hot topics that affect their daily lives: love, sex, relationships, gender and cultural issues, as well as HIV/AIDS.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Project Masiluleke (&quot;Project M&quot;)</td>
<td>South Africa</td>
<td>-</td>
<td>Mobile phone: SMS</td>
<td>HIV+</td>
<td>Using mobile technology, available to nearly 100% of South Africans, Project M uses SMS to communicate with people who are HIV+, providing counseling, providing information</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Reach Out</td>
<td>Australia</td>
<td>Inspire Foundation, Internet-interactive website</td>
<td>Internet-interactive website</td>
<td>Youth- Mental health</td>
<td>ReachOut is a mental health service that uses the internet to enable young people to help themselves and others, with a focus on health promotion and intervention. With a mobile-friendly site and forums, you can access help, info and support no matter where you are.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Refugees United</td>
<td>Global</td>
<td>-</td>
<td>Internet; mobile</td>
<td>Refugees</td>
<td>&quot;Refugees United has developed a web platform and mobile tools that drastically streamline the family tracing process for both NGOs and individuals.”</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Relax Lite</td>
<td>Global</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>Stress</td>
<td>This app is the perfect way to unwind and de-stress, and it also has had great success in therapeutic settings. The App teaches relaxation techniques, which have helped with ME, pain control, insomnia, post-traumatic stress disorder and many other stress</td>
<td>Established</td>
<td>-</td>
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<td>Name</td>
<td>Where is it Implemented?</td>
<td>Reference</td>
<td>Type of Intervention</td>
<td>Target/ Focus</td>
<td>Description</td>
<td>Pilot vs. Established</td>
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<tr>
<td>RespectED</td>
<td>Canada</td>
<td>-</td>
<td>Canadian Red Cross</td>
<td>Bullying/Violence prevention</td>
<td>explores why abuse and neglect occur and where youth can go for help. It is a 2 - 22 hour program to help young people, aged 12 and older, identify emotional, physical and sexual abuse, and neglect; how victims cope; why abuse happens; who can provide help; and, how to help a friend.</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>Rlabs: Mobile counseling Services</td>
<td>Africa</td>
<td>-</td>
<td>Mobile Phones: Interactive SMS</td>
<td>Youth-counseling</td>
<td>RLabs in collaboration with a number of international Non-profits provide mobile support services through the use of the JamiiX technology. This innovative contact support centre offers counseling in the areas of HIV/AIDS, substance abuse, abuse, stress and depression, and career counseling. These services are offered via mobile chat platforms (MXit, GTalk) and mobile social networks.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Shuttleworth Foundation: M4Lit Project</td>
<td>South Africa</td>
<td>-</td>
<td>Mobile Phones</td>
<td>Youth</td>
<td>The m4Lit project aimed to not only explore the potential for increased reading and writing for 21st century teens through mobile phones, but also to introduce a more interactive style of story writing and publishing that holds appeal to the participatory culture of youth.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Smart Phone used as self-management</td>
<td>United Kingdom</td>
<td>(Zheng et al., 2010)</td>
<td>Mobile Phone: Smart app (accelerometer, GPS)</td>
<td>Chronic disease</td>
<td>A smart phone containing an accelerometer and a global positioning system (GPS) module can be used to monitor outdoor activity, providing both activity and location based information. Heart rate, blood pressure and weight are recorded and input to the system by the user. A decision support system (DSS) detects abnormal activity and distinguishes life style patterns.</td>
<td>Established</td>
<td>EBP</td>
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<td>Name</td>
<td>Where is it Implemented?</td>
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<td>Type of Intervention</td>
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<tr>
<td><strong>SpunOut</strong></td>
<td>Ireland</td>
<td>-</td>
<td>Interactive website</td>
<td>Youth</td>
<td>&quot;SpunOut- an organization in Ireland that uses social media to empower young people aged 16-25 with information, support and opportunities&quot;</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td><strong>Stress Analyzer</strong></td>
<td>Global</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>Stress; at risk; depression</td>
<td>In the long term, any kind of stress can cause serious physical and mental problems. This App helps you to figure out your key stressors.</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td><strong>Stress Check</strong></td>
<td>Global</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>general</td>
<td>Stress Check utilizes a method of quantitative stress level assessment developed by Biocom Technologies, a well-known developer of various professional health assessment technologies.</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td><strong>Strongest Families</strong></td>
<td>Canada</td>
<td>-</td>
<td>Telephone</td>
<td>Mental health in youth</td>
<td>Family Help, a distance treatment program for child mental health</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td><strong>TCPal</strong></td>
<td>Global</td>
<td>-</td>
<td>Mobile phone: smart app (iTunes)</td>
<td>Cystic fibrosis</td>
<td>Keep track of your CF regimen with your iPhone or iPod Touch. Organize, schedule and track your daily cystic fibrosis treatment regimen right on your iPhone or iPod Touch. It's an easy-to-use tool to help manage daily treatments, medication, nutrition, and exercise - and it's free.</td>
<td>Established</td>
<td>-</td>
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<tr>
<td><strong>Teens Taking Charge: Managing Arthritis Online</strong></td>
<td>Canada</td>
<td>(Stinson et al., 2010)</td>
<td>Internet</td>
<td>Chronic Pain-arthritis</td>
<td>This is a 12-week internet-based self-management program of disease-specific information, self-management strategies, and social support with telephone support for youth with juvenile idiopathic arthritis (JIA) and their parents, aimed at reducing physical and emotional symptoms and improving health-related quality of life (HRQOL).</td>
<td>Established</td>
<td>EBP -evaluation: usability</td>
</tr>
<tr>
<td><strong>Telepsychiatry in schools</strong></td>
<td>Toronto, Canada</td>
<td>-</td>
<td>Video conference</td>
<td>Youth with mental health issues</td>
<td>Toronto District School Board launching new 3yr pilot program, making child psychiatrists more accessible to youth in need. Video conference sites set up at 4 schools in the TDSB, as well as at their admin buildings</td>
<td>Pilot</td>
<td>PBE</td>
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<td>Where is it Implemented?</td>
<td>Reference</td>
<td>Type of Intervention</td>
<td>Target/ Focus</td>
<td>Description</td>
<td>Pilot vs. Established</td>
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<tr>
<td>Telesleep: Pediatric Sleep Services</td>
<td>Alberta</td>
<td>(Witmans et al., 2008)</td>
<td>Telehealth-video conferencing</td>
<td>Children with sleep disorders</td>
<td>The package contained a letter stressing the importance of identifying sleep concerns in children and a five-item pediatric sleep screening instrument called “BEARS” (B D bedtime, E D excessive daytime sleepiness, A D awakenings, R D regularity and duration of sleep, and S D snoring) to enable clinicians to assess children for sleep problems</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>Text Me! Flash Me!</td>
<td>Ghana</td>
<td>-</td>
<td>Mobile Phone: SMS &amp; helpline</td>
<td>Female sex workers, MSM (men who have sex with men)</td>
<td>Text Me! Flash Me! Helpline uses cell phone technology to provide most-at-risk populations (MARP) in Ghana with friendly and accessible HIV and AIDS information, referrals, and counseling services from qualified providers.</td>
<td>Pilot</td>
<td>PBE</td>
</tr>
<tr>
<td>Text to Change</td>
<td>Uganda</td>
<td>-</td>
<td>Mobile phone: SMS</td>
<td>Youth</td>
<td>1st program of its kind in Africa. Projects that address a wide range of issues related to well-being, empowerment and education. Examples: -Interactive and incentive-based quizzes to educate, engage and empower people on well-being related issues -Programs that use mobile phones for Health Management Information -System purposes -SMS data collection surveys -Personalized medicine reminder programs -Price information systems for farmers -SMS-driven menu system</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>The Jack Project (with Kids Help Phone)</td>
<td>Canada</td>
<td>-</td>
<td>Telephone/internet</td>
<td>Children and youth- Mental Health</td>
<td>The Jack Project at Kids Help Phone promotes youth mental health and well-being in Canada. Activities include school outreach, Live chat (counseling for youth)</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>UCanPoopToo</td>
<td>USA</td>
<td>-</td>
<td>Computer-based: Online</td>
<td>Children with encopresis (&amp; their parents)</td>
<td>UCanPoopToo is the only online program clinically proven to provide the education and ongoing tools to solve the physical, emotional and behavioral issues of encopresis.</td>
<td>Established</td>
<td>EBP</td>
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<tr>
<td>Name</td>
<td>Where is it Implemented?</td>
<td>Reference</td>
<td>Type of Intervention</td>
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<tr>
<td><strong>Web-based Intervention to improve knowledge about HIV/AIDS</strong></td>
<td>Yunnan, China</td>
<td>(Tian et al., 2007)</td>
<td>Computer-based education</td>
<td>HIV/AIDS</td>
<td>Goal: To improve the knowledge of about HIV/AIDS among villagers and students. They initiated a web-based intervention project. Nanhua county received computers, training on accessing the website, and ongoing logistic support for diffusing information to their village colleagues. Mouding county received computers only, and Dayao county received neither.</td>
<td>Pilot</td>
<td>EBP-evaluation</td>
</tr>
<tr>
<td><strong>WelTel Kenya1</strong></td>
<td>Kenya</td>
<td>(Lester et al., 2010)</td>
<td>Mobile phone: interactive SMS</td>
<td>HIV+</td>
<td>Patients in the intervention group received weekly SMS messages from a clinic nurse and were required to respond within 48 h.</td>
<td>Established</td>
<td>EBP-evaluation: randomized control trial</td>
</tr>
<tr>
<td><strong>Wireless Headache Intervention</strong></td>
<td>Canada</td>
<td>-</td>
<td>Mobile phone: smart app</td>
<td>Pain-headaches</td>
<td>The app allows users to keep an electronic diary of their headaches, tracking data such as sleep patterns, diet, external conditions, and headache duration. The app does not require a minimum input of information, offering maximum flexibility for the wide range of users.</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td><strong>XoutTB</strong></td>
<td>Nicaragua</td>
<td>-</td>
<td>Mobile Phone: SMS</td>
<td>TB patients</td>
<td>X out TB seeks to reduce the necessity of daily health worker monitoring of TB patients by offering patients incentives for compliance. Patients in the program are given monthly supplies of urinalysis test strips that are dispensed every 24 hours out of a special dispenser. The strips, developed by the X out TB team, contain four printed numbers and embedded chemicals that turn a certain combination of numbers a new colour when they react with the urine of patients who have taken TB medication. Patients then send an SMS to a database reporting the numbers on their strip, which is monitored by health care workers and doctors.</td>
<td>Pilot</td>
<td>PBE</td>
</tr>
<tr>
<td>Name</td>
<td>Where is it Implemented?</td>
<td>Reference</td>
<td>Type of Intervention</td>
<td>Target/ Focus</td>
<td>Description</td>
<td>Pilot vs. Established</td>
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<tr>
<td>Youth in BC</td>
<td>British Columbia, Canada</td>
<td></td>
<td>Internet</td>
<td>Youth</td>
<td>Initiative of the Crisis Centre “YouthInBC.com (sometimes referred to as YIBC) is first and foremost an on-line crisis chat service, where you can chat 1-on-1 with a trained volunteer from the Crisis Centre, where our service is based. We also have this site, with information so you can learn more on a variety of youth-related issues, as well as resources: a list of organizations and websites where you can get help.”</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>YIRN- Youth Internet Radio Network</td>
<td>Australia</td>
<td>(Hartley, Hearn, Tacchi, &amp; Foth, 2003)</td>
<td>Internet; Radio</td>
<td>Youth</td>
<td>Young people from urban, regional, remote and Indigenous environments will learn, network, and create their own content on a Youth internet Radio Network, contributing to community capacity building. The research project described merges innovative internet design, policy analysis and ethnographic methods.</td>
<td>Established</td>
<td>EBP</td>
</tr>
<tr>
<td>Youthspace</td>
<td>Victoria, Canada</td>
<td></td>
<td>Internet</td>
<td>Youth</td>
<td>From Website- A safe space to reach out to when you're going through a rough time. Need someone to talk to . . . We're 'hear' to help! We can help you explore options, ideas and other resources, but we won't tell you what to do (who are we to give you advice?).</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>ZMQ</td>
<td>India &amp; Africa</td>
<td></td>
<td>Mobile Phones, gaming</td>
<td>general</td>
<td>Raise awareness about HIV/AIDS through mobile technologies</td>
<td>Established</td>
<td>PBE</td>
</tr>
<tr>
<td>Zumbido</td>
<td>Mexico</td>
<td></td>
<td>Mobile phone: interactive SMS</td>
<td>HIV+; urban and rural;</td>
<td>A group of approx. 10 are able to &quot;group text&quot; each other throughout the day about the different struggles they face and encourage each other</td>
<td>Pilot</td>
<td>PBE</td>
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Section 5: Discussion & Conclusions

For organizations and researchers looking to incorporate technology into program delivery, it is important to take some considerations into account:

- What type of technology would best suit the context in which I’m working?
- Are there others who use this type of technology in their work with young people?
- What evidence exists for using this type of technology with young people?
- What strength would this technology offer my project? What disadvantages need to be considered?
- Who will have direct contact/responsibility of this use of technology? What training would I need to provide to those overseeing/facilitating its use?
- What would youth in my program have to say about using this type of technology as a means of intervention?
- How will the ethical standards be applied?

Answering these preliminary questions will assist in considering how technology can be used in your program.

Recent years have seen an explosion of new, innovative programs using technology to reach at-risk young people. The proliferation of mobile phones in Africa, for example, has provided a far-reaching platform for various intervention programs, supports, and initiatives. In the midst of this wave of development, there is an obvious lack of evidence to support the effectiveness of these technologies (Barak & Grohol, 2011; Roberto et al., 2007).

There is a tendency to view technology as a panacea for all problems, particularly with young people. While they may be far more fluent in this mode, does it naturally follow that it is the optimal approach? One Laptop Per Child (OLPC) is an example of a campaign which put the use of computers and technology at the centre of positive child development (One Laptop per Child, n.d.). Launched in 2005, OLPC aimed to distribute 150 million laptops to children in the developing world by the end of 2007 (Kraemer, Dedrick, & Sharma, 2009). While this goal has not yet been reached, OLPC continues to pursue its vision. OLPC has been heavily criticized for its approach, particularly in its premise that having access to a laptop would be a valid solution for the lack of educational support and exposure to the world that children and youth in challenging contexts experience (Berson & Berson, 2010; Patra, Pal, Nedevschi, Plauche, & Pawar, 2007; Psetizki & Vázquez, 2009).

Innovations in technology have not been mirrored in the development of research and evaluation of those innovations for their potential to improve well-being (Lingley-Pottie & McGrath, 2007), particularly in youth. The transient nature of technology does present a significant challenge to research and evaluation which would strive to create an evidence base for these interventions. The rapid development of technology, along with the ever-shifting popularity among youth as to which devices and platforms are best, results in a constantly moving target for which programs to evaluate, and the technologies on which to focus. As Drotar et al., (2006) argue:

The implementation of many new technologies has been guided by a focus on pragmatic application, including documentation of usage and enhanced record keeping, user
preferences, satisfaction, and efficacy.... There has been much less emphasis on understanding the theory and principles that underlie technological applications and interventions.

Developing this theoretical basis is a key step towards evaluations that can influence the types of technological interventions created and sustained.

Another issue contributing to the need for more evaluation in this field is the general lack of sustainability of these programs. The literature is filled with examples of pilot studies of innovative projects that do not continue. More research is needed to help identify which technologies work best, particularly with children and youth in challenging contexts. The funding structure for most of these projects tends to favour the innovative, new idea over sustained implementation. Research agencies and governments are more apt to fund pilot projects, leaving longer term implementation to an organization’s expense. This often results in a financial burden which is unmanageable.

A result of the lack of evaluation is the risk posed to safety. Without established standards or evaluations for such interventions, there is very little quality control in terms of how they are designed and monitored. Many technology-based interventions are being developed and implemented with little, if any, input from health professionals and without using any theoretical framework. Mobile apps, for example, have been developed in huge numbers to address a wide variety of health and well-being issues from anxiety to healthy eating to managing headaches. While it does not follow that those developing these apps are without training and expertise, a difficulty arises in promoting the use of such technology without the backing or contribution of an experienced healthcare provider. Involving stakeholders in evaluation is another element of an effective evaluation which can offer strength to a program, in that it sets the impact of a program or intervention in the context of wider community. Stakeholders include those directly and indirectly impacted by the program. After identifying these actors, it is important to develop a strategy for how to engage them in meaningful ways.

One key theme to be addressed is the importance of youth voice in programing. Supporting youth voice is when “youth are respected for their ideas and opinions and feel free to state them within an organization or program” (Serido, Borden, & Perkins, 2011). In a report from the Institute of Development Studies, Polack argues that ensuring the voice of young people is cycled back into a program’s evaluation and implementation is important not only for personal development, but for the effectiveness of the program itself (Tedeschi & Kilmer, 2005).

This same argument is supported by a qualitative study conducted at the University of Arizona in 2009 with members of a nearby youth engagement centre. The purpose of the study was to see how experience in community programs can impact engagement among disadvantaged youth. The circumstances that surround vulnerable and at-risk young people were identified as preventing their ideas, their concerns, and their needs from being heard and validated. Through a series of focus group discussions, it was shown that, when youth felt that their voice was having an impact in program decision making, they were more likely to be actively involved in their community (Serido et al., 2011). This community involvement has been shown to foster the development of social skills, leadership abilities, and self-efficacy, as demonstrated by research done by Dallago (2009) and Greenwald et al (2006). Both studies focused on how youth voice was being incorporated in programing, notably for civic participation and for smoking cessation. Both show the value of including youth voices in meaningful discussion.
The literature affirms that incorporating youth voice in a meaningful way requires their active involvement in planning, implementing, and problem solving; allowing youth voice to be both expressed and heard. It is essential that this participation be based on equality, including full participation at all levels of decision-making (Matthew, 2009). As Krueger argues, it is when a program promotes this authentic involvement that “youth have opportunities for connection with others, for self-discovery, and for empowerment” (2005, p. 26), which then lead to more positive youth outcomes (Serido et al., 2011). These positive outcomes are linked to the supportive surroundings of the young person, where youth-adult relationships foster communication and encourage young people in their aspirations (Serido et al., 2011). Creating this safe space is key, particularly with at-risk youth.

Conclusion

The problem has never been a lack of exemplary initiatives nationally and internationally, but rather the disciplinary divides that have prevailed both within and across research and practice. By synthesizing and presenting evidence from researchers, practitioners, and communities, these reports have endeavoured to break down the barriers dividing these approaches. An integrated and sustainable community of practice then has the opportunity to grow; one that reflects the rapidly developing field of technology and its application to interventions with children and youth in challenging contexts.

This report has taken an important first step in synthesizing the knowledge garnered from the available literature, and the evidence base of experts and practitioners in the field, regarding effective strategies for using technology to reach young people in challenging contexts for the purpose of improving their well-being and safety. The next step is to mobilize this knowledge in both formal health and social services settings, as well as in community NGOs locally and internationally.
Section 6: Recommendations

Recommendation 1: Embrace Technology.
The challenges presented for using technology need to be held against the potential benefits, assessing if and how technology can be utilized to better serve children and youth in challenging contexts:

*Identify the purpose for using technology*
- Decide which type of technology would best meet the purpose of your program/intervention. Identify the systems and support needed for the use of this technology.

*Use technology to address gaps*
- Start by looking at what gaps could be addressed through the use of technology (e.g., access, support-needs) and how technology could increase the impact of your intervention, program, or research.

*Develop a risk-management plan*
- Mitigate technology risks by performing a risk assessment and developing a risk management plan.

Recommendation 2: Foster Partnerships among Stakeholders.
A broad view of who the stakeholders are will increase the project’s reach within the community and improve the quality of service reaching young people.

*Identify Stakeholders*
- This includes not only organizations and funders, but community members, local businesses, schools, parents, and young people. After identifying who these actors are, it is important to develop a strategy for how to engage them in your work.

*Do not rush, take time*
- Getting some stakeholders on board may take some time and persuasion, but it is a worthwhile investment. Forming partnerships with these stakeholders can help inform your practice, allowing for more effective and relevant service delivery.

*Develop relationships and partnerships*
- Engage with people in the technology industry and develop partnership for the development of content and delivery. Establish relationships with funders who support projects in your field. Develop relationships with researchers and academics with whom you can partner in conducting evaluations.

Recommendation 3: Engage Youth as Partners in Developing Programs.
Youth should be involved in research and programming from the beginning, following participatory research or integrated knowledge translation models. Engage children and youth in program development, implementation, and evaluation. The more that children and youth in challenging contexts are included in research the more valid and contextually relevant the results will be.

*Ask “Do young people value this technology?”*
- Listen to what the young people you serve have to say about how they see this technology and its value for your services.

**Recommendation 4: Promote the Sustainability of Programs/Interventions.**

It is important to plan for the financing of programs or interventions beyond the pilot or initial stages. Develop a sustainability plan for each project.

*Support established programs*
- Funders should support the sustainable development of a program or project that is already active and successful. It is critically important to this field’s development, both in credibility and in quality of services provided to young people in challenging contexts.

*Align projects with federal research funding priorities*
- Identify where federal research funding priorities are situated and align projects and interventions with these priorities where possible.

*Develop partnerships in private sector and non-profit organizations*
- Given that few technology programs have been evaluated, there are opportunities to collaborate with those outside of the traditional funding pipelines (e.g., in the business sector).

*Document programs’ strategies and lessons learned*
- Documenting programs—both the successes and lessons learned—will help inform future projects which use technology. Copyright or patent protection should be such that others can use the software even after it is discontinued. This idea of open source software has potential to help this field to develop in a sustainable way.

**Recommendation 5: More Evidence is needed to Support the Use of Technology-Based Programs.**

More evaluations are needed to support effective and efficient technology-based programs/interventions to help develop better mental health and violence prevention outcomes for children and youth in challenging contexts. We recommend that these be imbedded within each projects’ structure.

*Plan Evaluations*
- No intervention should be undertaken without an evaluation plan. The evaluation must be resourced. Evaluation is not an add-on but an integral part of every innovation. Program developers are encouraged to systematically evaluate their efforts and to publish evaluations so that an evidence base can be developed.

*Develop evaluation tools*
- Develop easy to use evaluation tools to assess the effectiveness of interventions using technology. These methods and strategies can be developed through partnerships between practitioners, academics, and policy makers. Attention is needed with regard to what is assessed (e.g., are these the factors most important to children and youth in challenging contexts?) and how best to engage children and youth in evaluations.

*Contribute to evidence-base*
- The evidence needed can come from usability studies, program evaluations, qualitative evaluations, comparative studies, randomized trials, economic analyses, impact assessments and systematic reviews.
Develop dissemination strategies
 Dissemination strategies are needed that make academic outlets, online outlets, and databases accessible. This will help to increase the visibility of this work.

Develop standardized ethical guidelines
 Standardized guidelines are needed for ethically sound practices that protect children and youth in challenging contexts and engages them through technology.

In developing a project or intervention, content development and technical design are two key items that need to be planned for by engaging with professionals and academics who can help inform an approach.

Engage cultural leaders
 Consult with cultural and context experts from the target audience to ensure that technological interventions are appropriate and implemented in a respectful way, with a focus on the cultural conceptualization of the construct of interest, through engagement and partnership.

Interoperability is needed
 Smartphone applications designed to provide services to children and youth in challenging contexts should be built for all devices when possible. Apps which are platform specific will have more limited accessibility.

Develop a technology marketing plan
 Through consultation with partners and stakeholders, including young people, develop a strategy for promoting your program/intervention. This will involve intentionally engaging with social media (e.g., Twitter, Facebook), as this is a popular medium which is most frequently used by young people.

Recommendation 7: Acknowledge diversity, that is, Culture and Context, in program delivery.
Not all methods will be appropriate for all youth, which also means that all methods outlined in this report will not be appropriate for all populations. Age and gender must also be taken into account.

Make resources available in different languages
 Ensure that youth from diverse cultural and linguistic backgrounds can understand resources, be they oral or written.

Engage families
 When culturally appropriate, engage young people’s families as well as young people individually.
References


Using Technology to Provide Support to Children and Youth in Challenging Contests


Using Technology to Provide Support to Children and Youth in Challenging Contests


83 CYCC Network · April, 2013 · http://cyccnetwork.org/technology


## Appendix A: Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Aboriginal</td>
<td>The descendants of the original inhabitants of North America. The Canadian Constitution of 1982 recognizes three groups of Aboriginal people: Indians, Métis, and Inuit. These are three separate peoples with unique heritages, languages, cultural practices, and spiritual beliefs. However, all share the common history of colonialism and attempted assimilation.</td>
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<tr>
<td>Adolescence</td>
<td>Adolescence begins with the onset of physiologically normal puberty, and ends when an adult identity and behaviour are accepted. This period of development corresponds roughly to the period between the ages of 10 and 19 years (World Health Organization, n.d.).</td>
</tr>
<tr>
<td>Alternative Care</td>
<td>Alternative care is defined as care for orphans and other vulnerable children who are not under the custody of their biological parents. It includes adoption, foster families, guardianship, kinship care, residential care and other community-based arrangements to care for children in need of special protection, particularly children without primary caregivers” (UNICEF, 2006, p. 15).</td>
</tr>
<tr>
<td>Best Practice</td>
<td>Interventions that incorporate evidence-informed practice, identify and employ the right combination of program elements to ensure targeted outcomes, and match these interventions to the local needs and assets of communities. They incorporate evidence-informed practice, identify and employ the right combination of program elements to ensure targeted outcomes, and match these interventions to the local needs and assets of communities.</td>
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<tr>
<td>Bullying</td>
<td>A form of aggression (physical, verbal, or psychological attack or intimidation) by one or more children that is intended to cause fear, distress, or harm to another child who is perceived as being unable to defend himself or herself. A power imbalance typically exists between the bully and the victim, with the bully being either physically or psychologically more powerful, resulting in repeated incidents between the same children over a prolonged period (Farrington et al., 2010, p. 9; Smokowski &amp; Kopasz, 2005, p. 101).</td>
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<tr>
<td>Child/Children</td>
<td>Every human being below the age of eighteen years unless under the law applicable to the child, majority is attained earlier (United Nations General Assembly, 1989, art. 1).</td>
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<tr>
<td>Child Maltreatment</td>
<td>There are five classifications of maltreatment: physical abuse, sexual abuse, neglect, emotional maltreatment, and exposure to intimate partner violence (PHAC-CIS, 2008).</td>
</tr>
<tr>
<td>Children and Youth in Organized Armed Violence</td>
<td>Children and youth employed or otherwise participating in Organised Armed Violence where there are elements of a command structure and power over territory, local population or resources (Dowdney, 2006, p. 13).</td>
</tr>
</tbody>
</table>
| Child Soldier               | A child soldier is any person under age 18 who is part of any kind of regular
<p>| <strong>Child Trafficking</strong> | The recruitment, transportation, transfer, harbouring or receipt of a child for the purpose of exploitation even if this does not involve any of the means set forth in [the definition of Trafficking in persons: ‘the recruitment, transportation, transfer, harbouring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation of the prostitution of others or other forms of sexual exploitation, forced labour or services, slavery or practices similar to slavery, servitude or the removal of organs’] (United Nations, 2004). |
| <strong>Community of Practice</strong> | The translation of best practices and the mastery of knowledge and skill through participation in the sociocultural practices and relations of a community (Lave &amp; Wenger, 1991, p. 29). A community of practice defines itself along three dimensions: |
|  | • What it is about: its joint enterprise as understood and continually renegotiated by its members, |
|  | • how it functions with respect to mutual engagement that bind members together into a social entity, and |
|  | • what capability it has produced, that is, the shared repertoire of communal resources (routines, sensibilities, artifacts, vocabulary, styles, and etc.) that members have developed over time (Wenger, 1998). |
| <strong>Chronic Illness/Disease</strong> | The word ‘chronic’ is typically used for conditions, illnesses, and diseases lasting three months or more. Often, chronic conditions are characterized by lasting symptoms and/or pain that persists, sometimes even despite treatment (What Is Chronic Illness?, n.d.). |
| <strong>Civic Engagement</strong> | Individual and collective actions designed to identify and address issues of public concern. Civic engagement can take many forms, from individual voluntarism to organizational involvement to electoral participation. It can include efforts to directly address an issue, work with others in a community to solve a problem or interact with the institutions of representative democracy (American Psychological Association, 2012). |
| <strong>Community Youth Development</strong> | Community Youth Development is an approach that espouses the principle that when youth are enlisted as active agents of community building, it contributes positively to both youth development and community development. Community Youth Development assumes the involvement of young people in their own development and that of the community in |
| <strong>Engagement</strong> | The meaningful and sustained involvement of a young person in an activity focusing outside the self. Full engagement consists of a cognitive component, an affective component, and a behavioural component- Head, Heart, Feet (Centre of Excellence for Youth Engagement, 2009). |
| <strong>Evidence-based Practice (EBP)</strong> | Interventions based on empirical, research-based support which are used to inform the judgements of practitioners in accordance with the particular priorities, needs, contexts and other factors of both service users and service providers (i.e., what research shows is effective). |
| <strong>Evidence-informed Practice (EIP)</strong> | The integration of experience, judgement, and expertise with the best available external evidence from systematic research (Chalmers, 2005, p. 229; Sackett et al., 1996, p. 71). |
| <strong>External Validity/Generalizability</strong> | The extent to which the claims/arguments are generalizable to, or applicable in, contexts different from the specific context in which they were generated (i.e., transferability). |
| <strong>Family</strong> | The fundamental group of society and the natural environment for the growth and well-being of all its members and particularly children, should be afforded the necessary protection and assistance so that it can fully assume its responsibilities within the community (United Nations General Assembly, 1989). |
| <strong>Grey Literature</strong> | Information produced on all levels of government, academia, business and industry in electronic and print formats not controlled by commercial publishing. In other words, where publishing is not the primary activity of the producing body (What is Grey Literature?, 2011). |
| <strong>High Quality Information</strong> | Authoritative, high quality information is any peer-reviewed source that is reliable, objective, and internally and externally valid. |
| <strong>Homeless Youth</strong> | Definitions of the term ['homeless' or] ‘street youth’ are numerous and varied, as are the social realities of different countries. However, one constant found among all street youth is their precarious living conditions, which include poverty, residential instability and emotional and psychological vulnerability. These conditions may lead to behaviour that exposes street youth to physical, mental, emotional and psychological risks. (Street Youth in Canada, 2006) |
| <strong>Internal Validity</strong> | The extent to which the evidence put forward actually relates to the claims/arguments being put forward. |
| <strong>Intervention</strong> | In this report, an intervention refers to the program, project, or strategy employed by a government agency or organization that aims to introduce new ideas, activities and information intended to improve their target audience’s quality of life. |
| <strong>Knowledge Mobilization</strong> | In the context of the CYCC Network, it is mobilizing knowledge about best practices for non-governmental organizations. |
| <strong>Local</strong> | Local knowledge is used in everyday situations. Its main value lies in helping |</p>
<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Local people cope with day-to-day challenges, detecting early warning signals of change, and knowing how to respond to challenges. Local knowledge is seldom documented and is mostly tacit (Fabricius et al., 2006, p. 168). See page 6 for the core concept.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maltreatment</td>
<td>Physical abuse, sexual abuse, emotional maltreatment, neglect, and exposure to intimate partner violence, all of which pose significant risk of harm to a child’s physical or emotional development. Accordingly, situations classified as maltreatment may range from those in which a caregiver intentionally inflicts severe physical or emotional harm on a child, to situations in which a child is placed at risk of harm as a result of a caregiver’s clear failure to supervise or care for a child, to situations in which living conditions would make it extremely difficult for any caregiver to ensure a child’s safety (Trocme et al., 2008, p. ix).</td>
</tr>
<tr>
<td>Neglect</td>
<td>The failure of parents or carers to meet a child’s physical and emotional needs when they have the means, knowledge and access to services to do so; or failure to protect her or him from exposure to danger. In many settings the line between what is caused deliberately and what is caused by ignorance or lack of care possibilities may be difficult to draw (Pinheiro, 2006, p. 54).</td>
</tr>
<tr>
<td>Objectivity</td>
<td>Neutrality or the extent to which evidence is unbiased.</td>
</tr>
<tr>
<td>Peer-reviewed Information</td>
<td>Books, journals, and conference proceedings published by scholarly publishers or professional organizations, and thus subject to independent review by experts. The credibility and authority of the information is determined by extrinsic criteria (i.e., based on the reputation of the author, publisher, and so on).</td>
</tr>
<tr>
<td>Physical Violence</td>
<td>The intentional use of physical force against a child that either results in or has a high likelihood of resulting in harm to the child’s health, survival, development or dignity. In extreme cases, this violence can result in a child’s death, in disability, or in severe physical injury. In all instances, however, physical violence has a negative impact on a child’s psychological health and development. Includes homicide, sexual violence, corporal punishment beating, kicking, biting, choking, burning, scalding, or forced ingestion (Pinheiro, 2006, pp. 51–52).</td>
</tr>
<tr>
<td>Positive Youth Development</td>
<td>Youth development views youth both as partners and central figures in interventions. These interventions systematically seek to identify and utilize youth capacities and meet youth’s needs. They actively seek to involve youth as decision makers and tap their creativity, energy, and drive; and they also acknowledge that youth are not superhuman—that they therefore have needs that require a marshaling of resources targeted at youth and at changing environmental circumstances (family and community) (Mafile’o &amp; Api, 2009).</td>
</tr>
<tr>
<td>Practice-based Evidence (PBE)</td>
<td>The practice employed by practitioners that has proven to be effective, arising from the contingent conditions and characteristics that facilitate program success (Barkham &amp; Mellor-Clark, 2003; Fox, 2003).</td>
</tr>
<tr>
<td>Refugee</td>
<td>Any person who, owing to a well-founded fear of being persecuted for</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Reliability</td>
<td>The extent to which the evidence is stable—i.e., would be the same if measured at different times and/or by different observers.</td>
</tr>
<tr>
<td>Resilience</td>
<td>In the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social, cultural, and physical resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provided and experienced in culturally meaningful ways (Ungar, 2008, p. 225).</td>
</tr>
<tr>
<td>Service User</td>
<td>For the purpose of this report, we will use the term “service user” to refer to any group or individual who can affect or is affected by the achievement of the organization's objectives (Freeman, 1984, p. 46). Synonyms include stakeholder, beneficiary, consumer, and participant.</td>
</tr>
<tr>
<td>Sexual Violence</td>
<td>Includes sexual touching, abuse or rape, forced sex within forced and early marriage, spousal abuse (physical and psychological), honour killings and intimidation within the family, or harmful traditional practices (e.g., female genital mutilation/cutting, and uvulectomy). The shame, secrecy and denial associated with sexual violence against children foster a pervasive culture of silence, where children cannot speak about sexual abuse they have suffered, adults do not speak about the risk of sexual violence or do not know what to do or say if they suspect someone they know is sexually abusing a child (Pinheiro, 2006, pp. 54–55).</td>
</tr>
<tr>
<td>Technology</td>
<td>Innovations in technology that have been used with children and youth in challenging contexts to help prevent violence and promote well-being.</td>
</tr>
<tr>
<td>Traditional Knowledge</td>
<td>Traditional knowledge builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change (Government of Canada, Canadian Environmental Assessment Agency, 2004). Traditional knowledge is a unique form of local knowledge which is needed to inform effective programs and interventions.</td>
</tr>
<tr>
<td>Unaccompanied Refugee Children</td>
<td>Unaccompanied children are those who are separated from both parents and are not being cared for by an adult who, by law or custom, is responsible to do so (United Nations High Commissioner for Refugees, 1994, p. 121).</td>
</tr>
<tr>
<td>Violence</td>
<td>The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, and deprivation (Krug, Dahlberg, Mercy, Zwi, &amp; Lozano, 2002, p. 5).</td>
</tr>
<tr>
<td>Young People</td>
<td>This is a broad term used to refer to children, adolescents, and youth as...</td>
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</tbody>
</table>

Reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his[her] nationality and is unable or, owing to such fear, is unwilling to avail himself[her] of the protection of that country; or who, not having a nationality and being outside the country of his[her] former habitual residence as a result of such events, is unable, or owing to such fear, is unwilling to return to it (United Nations, 1951).
<table>
<thead>
<tr>
<th>Youth</th>
<th>Youth are defined as persons between the ages of 15 and 24 years (UNESCO, 2012).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth Community</td>
<td>A youth community can be defined as a population of youth who share backgrounds, situations, or lifestyles with common concerns, i.e. ethnic background, socioeconomic background, geographical area (rural, for example), lesbian or gay youth, and etc. (Halifax Regional Municipality, n.d.).</td>
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## Appendix B: Search Terms

<table>
<thead>
<tr>
<th>Technolog* or &quot;social network*&quot; or mobile or internet</th>
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<tbody>
<tr>
<td>Review or synthes* or meta-analy* or &quot;cross-cultural&quot;</td>
</tr>
<tr>
<td>Youth or &quot;young adult&quot; or teen* or adolescent* or child*</td>
</tr>
<tr>
<td>Aboriginal</td>
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<tr>
<td>Alternative care, orphan</td>
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<tr>
<td>At-risk, vulnerable, marginaliz*, poverty</td>
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<tr>
<td>Gang, homeless, street-involved</td>
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<tr>
<td>Intervention, program, project</td>
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<tr>
<td>Maltreat*, abuse, neglect, child welfare, domestic violence</td>
</tr>
<tr>
<td>Mental illness, Chronic illness, Health promotion</td>
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<td>Military families</td>
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<td>Refugee, immigrant, displace*</td>
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<td>Resilience</td>
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<td>Trafficked, Labour, exploit*, workplace</td>
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<td>Urban/ Rural, slum</td>
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<td>War, war affected, child soldiers, conflict, trauma, unrest</td>
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<td>Computer-based, software</td>
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<td>e-diary*</td>
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<tr>
<td>Gaming</td>
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<td>Internet, interactive website, emails</td>
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<td>Mobile- SMS, message, apps</td>
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<tr>
<td>Smart Apps, applications</td>
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<tr>
<td>Social media, networking</td>
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<tr>
<td>Telephone</td>
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<tr>
<td>Counseling</td>
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<tr>
<td>mHealth, telehealth, telemedicine</td>
</tr>
<tr>
<td>Self-management, home care, distance therapy</td>
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<tr>
<td>Tracking, reminders</td>
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