



## **An evidence based approach to evaluation: A case study of the Positive Partnerships web space**

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The Positive Partnerships is an Australian Government initiative that is designed to provide information and professional development for Australian parents, carers and school staff working with school aged students with autism, using a combination of face to face and online delivery. This paper investigates first, how the website can present research-based interventions in a field marked by “bad science, risky medicine and the search for a cure” (Offit, 2008). Second, the paper offers suggestions for website evaluation. Maintaining a clear focus on the purpose of the site, and judiciously selecting among readily available online evaluation tools, are central to success. Triangulation, representativeness, independence and other key safeguards can also shore up the validity of website appraisals. The paper concludes by describing nine different complementary ways that the Positive Partnerships website has been evaluated, and briefly sketches a sample of the findings. Suggestions for future research are provided.

Keywords: autism; e-learning; evidence-based; teacher professional development; evaluation.

### **Introduction**

It has been estimated (Center for Disease Control, 2009) that one in 110 people has autism, an information-processing disorder which is marked by repetitive and restricted behaviours and impairments in communication and socialisation (American Psychiatric Association, 2000). Autism is a complex and puzzling disorder that has attracted a plethora of interventions with greater or lesser (including non-existent) degrees of evidence. A casual visitor to Google will find that the word “autism” yields 79,000,000 results in less than a second, and “autism websites” yields 8,890,000 results in the same time span. With so many sites to choose from, how can parents, professionals, students and the general public know which ones to trust? Conversely, from the perspective of the website creators, questions arise as to what principles should be adhered to during site construction, and how the website should be evaluated to ensure it fulfils its intended purpose.

This paper traces the history of the *Positive Partnerships* website (<http://www.autismtraining.com.au>) to illustrate some of the challenges and possible solutions facing the creators of a web space that is customised for a particular population. In keeping with the theme of evidence-based practice, two issues will be discussed. *First, what procedures were used to ensure integrity of the site content, particularly in terms of their research basis? Second, what evidence was gathered to determine whether the web space was successfully fulfilling its*

*intended purpose?*

## **Using evidence-based website content: Issues for practitioners**

Begun in 2008, the *Positive Partnerships* website has been operating under a four year \$23 million funding arrangement with the Department of Education Employment and Workplace Relations as part of the Australian Government's *Helping Children with Autism* package. The website is designed to complement a series of face to face workshops and information sessions for school staff, parents and carers to assist them to meet the needs of school aged students with autism.

Evidence based content on the site is important because autism intervention is a contested area (Offit, 2008). Controversies arise partly because two affected individuals are rarely alike. The diversity of autism expression makes it difficult to use the research gold standard of randomised control designs which require participant groups to be matched on all relevant characteristics apart from the intervention, which only the experimental group receives. Without a control group, the possibility that observed improvements over time are simply due to maturation rather than the intervention, cannot be ruled out. For instance, interventions that could potentially be included in the website range from the use of speech therapy, applied behaviour analysis and visual supports through to weighted vests, hyperbaric chambers, and swimming with dolphins. Whilst some of these appear extreme, there is nevertheless the possibility of false negative errors. That is, *effective practices could be wrongly excluded simply because sufficient supporting evidence has yet to become available*. This dilemma is particularly resonant in autism research, where we know that best results are obtained when intervention occurs early in the person's life. As graphically described by Szatmari, (1999) many parents of newly diagnosed children are desperate for the latest cure, and they may feel that waiting for appropriate evidence from the "research establishment" robs their child of the opportunity to improve at a time when (s)he may have been most receptive to treatment. For their part, researchers know that recommending only those interventions that have garnered sufficient support is likely to curtail the speed of progress. They also know that marking time is contrary to the researcher's role of creating " ... *new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings*" (DIISR, 2011, p 7).

The tension between innovation and following promising new leads on the one hand, and relying on evidence based practice so as to avoid a disappointing failed intervention on the other, can be partly reconciled by first appreciating that evidence is not an all-or-none concept. Instead, evidence for particular practices can be envisaged as lying on a continuum. In the United States for example, federal laws distinguish between the following three levels of evidence in the education of students with disabilities:

- Research based practice, which includes action research documenting circumscribed programs with limited generality to other individuals or contexts
- Scientifically based research that is systematic, replicated, and had undergone a peer review process
- Evidence based practice, which is quantitative, demonstrates cause and effect, and has sufficient magnitude.

At one end of autism research are the studies with robust designs that include features such as randomised controls, repeated measures, well replicated findings, triangulation, and adequate reliability. The three US levels of evidence tend to cluster at this high end of the continuum. At the other end are poorly documented single instances that may include beguiling treatments that hold the promise of a cure. In the latter cases, parents may not care about lack of evidence – so how should the researcher proceed, if they are concerned to keep up with the latest developments whilst simultaneously minimising possible parental disappointment?

The solution to content integrity adopted by *Positive Partnerships* has been not to dictate which interventions should be taken on board, but instead, to help the parents and teachers make informed choices based on the available research. A series of fact sheets has been produced which include information about evidence based practice. The website gives prominence to approaches underpinned by sound research but does not give blanket recommendations for specific named treatments. Instead it provides tenets of good practice and provides guidelines so parents and teachers can make their own decisions. This strategy is consistent with general principles of collaboration, individualisation and parent /teacher empowerment, and recognises the importance of first hand knowledge of the child, so that approaches can be tailored to individual circumstances.

## **Evidence to inform website evaluations**

Important as evidence-based content may be, it should not be the sole criterion used to judge a website. This brings us to the second issue addressed by the current paper. Good websites are marked by high participant engagement, with content that is not only accurate, but accessible and easy to find, supported by a seamless integration of technology, pedagogy and content (Hodes, Foster, Pritz & Kelly, 2010). All website owners should evaluate their online content and processes, and determine how well these align with the original reasons for establishing the site. This is easier said than done. If processes and/or metrics are misapplied they can provide a misleading picture of the value of a site. The remainder of this paper uses the *Positive Partnerships* experience to illustrate some of the decisions, challenges, data collection and analyses that were undertaken to evaluate the website and provide an evidence base for future autism e-learning.

The *Positive Partnerships* web space was established in response to a government tender, so the first and most obvious step for the website evaluation was to ensure that it conformed to the funding requirements. The general brief was to develop and maintain an engaging, interactive and user-friendly project web space that facilitated the online workshops and e-learning opportunities for parents, carers and school staff and thereby promote “autism friendly” schools and productive home-school partnerships. The vision for the web space was that it would be instrumental not only in helping to create a pool of knowledgeable parents and school staff, but that it would also facilitate networking between professional development participants, thereby sustaining an autism community of practice. Thus, the web space was more than a content repository, although the provision of evidence-based and nationally consistent content was obviously important. The web space would also have administrative functions (such as enabling online registration for workshops and providing reporting statistics); pedagogical imperatives (such as allowing self-paced learning and significant choice); and access requirements, since the autism initiative was nation-wide. Clearly these were complex requirements which illustrate a recurrent theme in this paper: the views of stakeholders, including reference groups as well as the participants themselves, are critical.

Although there is a wealth of information about website evaluation, it has to be used selectively. For example, it is possible to calculate usage levels by using the Google Page Rank, an easily accessible measure from zero to ten that is based on the number of incoming links from other websites. The greater the number of websites that put a link to a given website, the greater the page ranking for that site. Apart from the fact that the metric can be manipulated, the measure reflects not how potential participants value the website, but how other websites value it. Even when the focus turns to participants rather than sites, other freely available statistics can be skewed to an oversimplified marketing orientation. A common tactic is to compare the number of visits to the site relative to all other sites, and use this to place a monetary value on the site. However the *Positive Partnerships* web space is not designed for advertising or revenue raising, nor does it target the general public although anyone is free to visit the site. It is designed primarily for parents and teachers of school aged children with autism, who value the site differently because of their close personal involvement. These examples illustrate again the importance of each web space customising its reporting statistics to comprehensively survey the views of the users it is designed to serve.

The above example also points to the dangers of relying exclusively on a small data set. Chiou and Perng (2010) surveyed the literature from 1995 to 2006, and extracted the following research methodologies in website appraisals: survey (42%); think-aloud experiment (23%); content analysis (17%); case study (10%); automatic evaluation (5%); and concept development (3%). Accordingly, the *Positive Partnerships* project has employed an array of methods to collect quantitative and qualitative data about its web space. Consideration has been given to the following safeguards (Kervin, Vialle, Herrington, & Okely, 2006):

- Collecting a variety of data types (qualitative as well as quantitative)
- Ensuring that not all the evaluation is collected online, in order not to limit the voices of those in rural and remote locations or those with accessibility issues
- Triangulating the data by collecting it from different sources and using different methods,
- Collecting data from the greatest number of participants as possible to increase confidence in the representativeness of the data

- Constructing a comprehensive user profile, to determine if the web space provides equitable services for people with differing experience, professional status, or geographic locations
- Designing continuous automatic data collection, to analyse trends over time
- Creating the web space according to leading practice principles and testing these against the subjective experiences of participants
- Ensuring that the evaluations not only are independent, but are also perceived as such. The web space has been periodically provided with internal formative evaluations from individuals at arm's length from the project, to maximise impartiality. This was complemented by an independent summative evaluation at the end of the second year of delivery to measure the effectiveness, appropriateness and efficiency of the Project.

With the above safeguards in mind, the *Positive Partnerships* project has relied on nine major sources of evaluative data. These are outlined below, along with a brief summary of our findings and lessons learnt.

- 1. User statistics.** A range of statistics is collected automatically as each participant logs on. These statistics enable evaluation of usage levels in terms of total logins, unique logins and duration), user locations/backgrounds, and the content accessed. These have proved to be extremely useful for planning. The website currently attracts 150-200 visits each week and at the time of writing has about 13,500 active users. Online activity, not surprisingly, is linked to the face to face workshops.
- 2. Think aloud protocol** for attendees at face-to-face workshops. To determine the user friendliness of the site, volunteers with a range of computer competence and access performed typical tasks on the Positive Partnership site and their comments were recorded and later, acted upon. We found that participants wanted a search button; that some files were slow to upload; that some participants were confused by computer terminology such as “online learning portal”; and that they all appreciated time-saving features such as being automatically redirected to resume an activity at the point where they had left off.
- 3. Module review questions.** Participants complete a short series of open and closed-answer questions to assess their learning of module content. Even though approximately three quarters of respondents did not attend the face to face workshops, they still rated the modules favourably, indicating that they were successful stand-alone activities.
- 4. Module 1 quiz.** To bring participants to a more comparable level of entry knowledge for the first face to face workshop, they were required to complete a module and associated quiz before the workshop in order to assess their level of learning. The quiz is compulsory for teachers attending the face to face workshops who wish to have their learning credited towards a postgraduate qualification. Gathering statistics on the quiz right from the outset led to adjustments such as the removal of an ambiguous item, thereby eliminating a possible source of disappointment at an early stage.
- 5. Public evaluation** of the online Learning platform. Everyone is invited to complete an online survey, in order to better understand the views of all users, including people who have not attended any of the face-to-face workshops /information sessions, but who could benefit from the “Positive Partnerships” site. This evaluation includes both objective and open ended questions and has been extremely useful in gauging people’s views of the site particularly regarding the usefulness of content, participants’ understanding and engagement, their preferred site features, and suggestions for improvement.
- 6. Public online feedback.** A feedback tool is provided to enable participants to provide online feedback at any stage about content, faults, and new enhancements. This averages only about 100

responses per year. The most common response category concerns faults, with the majority of these falling in the technology domain and particularly speed of access.

- 7. Pluralistic walk-through.** This is one of the few evaluation tools that does not use participant feedback. It involves a formal internal audit of the development and affordances of the web space to evaluate it against an exhaustive list of the DEEWR requirements for the web space. It has proved to be a transparent tool that allows a quick evaluation of whether the project is “on track”.
- 8. Discussion Board analysis.** Teachers and school staff, and parents/carers can log on to a discussions tool to share experiences. We found the Discussions tool generated a large amount of text: 1830 pages in the first few months. Not only did these require moderation, but the evaluation had to be managed strategically. The responses generated were therefore subjected to a content analysis using Leximancer, a data mining software tool that also displayed data visually within seconds on a concept map. It was found that “student” was the most salient theme, highly connected with the concept “autism”, which was consistent with high content validity. There was also a high emphasis on practical strategies to address students’ needs, supporting the value of the site.
- 9. Independent summative evaluation.** The external evaluator was able to enrich the data collection via the use of focus groups, submissions, case studies, surveys and other consultations, and recommended that additional funding be provided to continue the project.

## Concluding comments

This paper has firstly attempted to resolve issues associated with the provision of evidence-based content in the contested area of autism intervention. Secondly it has suggested several guiding principles and pointed to the importance of using complementary methods to try to obtain a comprehensive picture of any website, over and above a mere index of participant satisfaction.

Several caveats are in order. The participants’ access to the website was linked to their participation in face to face sessions, so it is difficult to unambiguously attribute any improvements in knowledge to the website or the face to face sessions. A second aspect of website evaluation that deserves mention is the use of direct versus indirect measures of success. The Positive Partnerships project was designed to improve the educational outcomes of students with autism, by assisting their parents, carers and teachers to become better informed and competent in meeting their needs. Largely through analysis of the module review questions, quiz, public evaluation, and discussion board, it has been possible to conclude that the participants’ knowledge and confidence has increased. The data also confirmed that participants also perceived better outcomes for their students. Nevertheless, until direct observations of student outcomes are made by researchers, the possibility exists that teachers’ perceptions of their students’ progress were coloured by their expectations. Verifying the impact of the Positive Partnerships initiative on students with autism remains a tantalising possibility for future research.

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