A Web 2.0 Technology-Based System to Motivate and Guide Asperger and Neuro-Typical Students through Their Dissertation

Abstract

This paper outlines a project that was initially intended to investigate the difficulties that Asperger syndrome (AS) students have whilst undertaking the dissertation part of the Undergraduate Major Project. This was extended due to a request from the Staff and Educational Development Association (SEDA) to include Neuro-typical (NT) students in the research. The research was initiated through a case study (Bowman & Scaife, 2010a) that provided an insight into the complexities of supervising an AS student through the dissertation process. An action research investigation was then undertaken to identify problems with the dissertation, significant to AS and NT students, and looked at the pedagogical and assessment strategies that could be put in place to address these issues. A virtual learning environment (VLE) was developed using Web 2.0 technology (blogging) to enable students to undertake the preparation of the dissertation proposal. This VLE has been piloted and the results have indicated that the system appears to significantly improve the student experience of the students taking part.

Keywords

Asperger syndrome, dissertation proposal, blogging, community of practice

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A Brief Introduction to Asperger Syndrome

The condition was identified by Hans Asperger, whose paper, published in 1944, has become a landmark in the development of understanding of autism (Frith, 1991). Asperger syndrome (AS) is a lifelong disability within the autism spectrum and affects how a person makes sense of the world, processes information and relates to other people. People with AS can be characterised by a triad of impairments: communication, social interaction and social imagination. However, they are often of average or high intelligence but may have specific learning difficulties such as dyslexia, dyspraxia and attention deficit hyperactive disorder (ADHD) (Rajendran & Mitchell, 2000; NAS, 2008).

In contrast, neuro-typical (NT) is a term recommended by the National Autistic Society that is used to describe people without an autistic spectrum disorder whose neurological development is such that society in general would perceive as normal their ability to process linguistic information and social cues (Doherty, McNally & Sherrard, 2000; Bleach, 2001).

There is confusion over the prevalence and gender distribution of AS; however, some data is available. Depending on the severity of the symptoms and on the views of the researchers involved, estimated rates of prevalence range from 0.4% to 1% of school aged children, with a male to female ratio of between 4 and 9 to 1 (Myles & Simpson, 2001; Dillon, 2007; NAS, 2008). However, it does appear that increasing numbers of children and young people are being identified with the disorder (Myles & Simpson, 2001). According to Martin (2008, p. 23) ‘the increase in diagnosis since 1996 appears to be startling’.

Asperger Syndrome Support in the Education System

As more and more children with AS enter mainstream education, research has been undertaken on facilitating the inclusion of such pupils into primary and secondary schools (Hobbs, 2003; Johnson, 2007). Much of this research has been directed towards the identification of support structures for social, behavioural and sensory issues (Myles & Simpson, 2001), although a particular area of research has been directed at using computer-based environments to teach AS pupils social skills (Jones & Selby, 1997; Silver & Oakes, 2001). Swettenham (1996) has suggested that computers are an ideal educational medium for individuals with AS, providing, for instance, emotional distance between the interactants, control over the learning environment and over the pace of progress.

Young people with AS are now successfully completing their secondary education and are moving on to further education establishments, with their numbers increasing each year (Martin, 2008). As a result, this has stimulated research into the integration of AS students into higher education and, specifically, into universities. Significant research has been undertaken to identify the resources required to support these students in such areas as transition and induction, study and organisational support, use of information technology, peer and mentor support, social skills support and test-taking strategies (De Montfort University, 2005; Martin, 2008).

AS students can have an ‘idiosyncratic pursuit’ (Ghaziuddin, 2005, p. 46) based on a particular obsessive interest. The distractions caused by such obsessions can cause AS students time management problems, missed submission dates and they can produce work that is outside the bounds of the academic subject area (Bowman & Scaife, 2009, 2010a).

The Undergraduate Major Project

During the final year of study for an honours degree students are required to undertake a module entitled the Undergraduate Major Project. This module is a self-managed learning module with limited direct teaching content. Students are assigned a supervisor with whom they are allowed four hours face-to-face supervisory contact over the duration of the project.

The Requirements of the Undergraduate Major Project

1. The project proposal – up to 3,000 words
2. The interim report and presentation
3. The poster presentation
4. The dissertation report – 10,000-word report plus (within the Faculty of Science and Technology) the production of an artefact
Methodology
The requirement to support an AS student with the dissertation section of the Undergraduate Major Project enabled the authors, using case study as a method, to undertake an ethnographic investigation into the pedagogical strategies required to motivate and guide the student (Elliott & Lukes, 2008). Data was collected from: observations of the student; the interaction with the supervisor and learning support staff; minutes of meetings held with the student; emails and other correspondence exchanged between the student and the supervisor; and the student’s draft and final dissertations. This research was reported by Bowman and Scaife (2010a).

Following the case study (Bowman & Scaife, 2010a), the authors were encouraged to undertake an action research project (Cresswell, 2009), funded under a University Learning and Teaching Fellowship Award, to widen the scope of the research and develop a system to support AS students undertaking the dissertation proposal. At the Staff and Educational Development Association’s (SEDA) request, an analysis of the data pertinent to NT students was included in the study and the research for both AS and NT students was disseminated at the SEDA conference in 2010. Focus groups, that included both AS and NT students, all undertaking the Multi-Media Computing Pathway within the Faculty of Science and Technology, were set up and the discussions were recorded and transcribed.

Factual Findings from the Research
The transcriptions from the focus groups were analysed independently by the two researchers. Initially, general areas for investigation were identified that included: the academic requirements of the proposal and the final dissertation; the timescale involved with the submission of the ethics application, the proposal and the final dissertation; and the attitudes of the students to the blogging process. The issues raised by the students within these categories were then identified. These were then reviewed jointly by the researchers and a list of major issues produced. This process was undertaken for both the AS and the NT students.

The major issues about the proposal and the final dissertation as identified by the AS students were:

1. AS students required significant support to formulate the final dissertation proposal and the dissertation itself.
2. AS students should be made aware of the dissertation early in their study programme in order for them to assimilate the concept and expectations surrounding a substantial piece of academic work.
3. Students should start to prepare for this at the beginning of their second year, probably in a phased approach – with one preparatory session and one or two revision sessions later on in the year.
4. The structure could be offered as a blog – AS students indicated they enjoyed using a blog as it provided freedom of expression and they find it a flexible medium. A blog or a dedicated site on a VLE should be considered not only for the dissertation proposal, but also for the dissertation itself.
5. The support offered should be structured to guide the student through the proposal process.
6. Using the first person in their academic writing should not penalise the students.

The most important issues about the proposal and the final dissertation as identified by the NT students were:

1. The dissertation was considered to be at a different level to the work that had been previously undertaken and students felt unprepared for what was required.
2. For most module assessments, the students were used to creating artefacts (web pages, videos, sound recordings, etc) with, at most, a 3,000-word essay. Creating a project proposal followed by the dissertation itself was considered a heavy workload.
3. Students who are mature, working or living at home would have limited contact with other students during the Undergraduate Major Project module.
4. Students did not fully appreciate the significance of the Undergraduate Major Project to the level of honours degree that they would be awarded.

5. Some students were in favour of a dedicated blog for the dissertation proposal, but were more reticent about the dissertation itself. They pressed the point that this piece of work should be attempted with minimal supervision.

Use of Web 2.0 Technology

‘There is no agreed definition of Web 2.0’ technology; however, the Joint Information Systems Committee (JISC) (2008, p.1) stated that ‘most people use the term to cover the use of applications that involve web pages and which involve the networking and sharing of information, including data, text, images, moving images and sound recordings’ with ‘users generating and distributing content’.

In two modules, one in each of years one and two of the honours degree pathway, Multi-Media Computing, in the Faculty of Science and Technology, a blog (Web 2.0 technology) was used to log the students’ work, to aid reflection, and ultimately form a community of practice within the class. At the end of the academic period the blog was handed in as the assignment. It appeared that both AS and NT students enjoyed the blogging process and blossomed using this structured approach to their learning (Bowman, 2007).

As a result of the issues identified in the case study (Bowman & Scaife, 2010a), the programme of action research and the researchers’ previous experiences with blogging, a pilot blog was developed (see Figure 1) to support students undertaking the proposal section of the dissertation (Bowman & Scaife, 2010b). Edublog.org was chosen as the blog provider, as the blog is free, provided a safe, reliable and completely private environment, offered flexibility for development and the ability to hold plenty of information. Edublogs have an interface that is similar to Facebook so it would be likely to be familiar to the students.

The pilot blog was set up so that both the supervisor and the learning support staff could post prompts and comments to the students, according to the stage they had reached in the development of their proposal. Sub-pages were produced, which appear on the blog as tabs, which represented all the different sections

Figure 1. Screen Capture of Dissertation Proposal Blog
of the dissertation, such as: Introduction, the Abstract, ‘Literature Review’, etc. The student only had to click on the tab to reveal pertinent information about each relevant part of the proposal.

Each student taking part in the pilot blog set up their own blog in Edublogs, and their blogs were linked as a blogroll (list) to the supervisor’s main blog (right hand side of the blog). This meant that their blogs were just a click away, and the supervisor could monitor progress. An extra blogroll linked useful support sites, such as research ethics, Harvard referencing and sites providing competition briefs, which are helpful to trigger ideas for the dissertation. For AS students, access was also provided to the student’s learning support assistant (LSA).

In February 2010 the first prompt posting was placed, asking the students to use the support links to help them consider current and relevant subject choices for their dissertations. Each prompt had to be written in a literal way, to avoid misinterpretation, and comments were always designed to be encouraging, upbeat and informative.

Use of the Blog
Table 1 shows how often each student posted over a period of seven months. Over the summer period, postings were very low, but picked up significantly in August.

<table>
<thead>
<tr>
<th></th>
<th>No. of postings</th>
<th>Student Comments</th>
<th>Lecturer Comments</th>
<th>Learning Support Assist Comments</th>
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</thead>
<tbody>
<tr>
<td>AS Student 1</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AS Student 2</td>
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<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>NT Student 1</td>
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<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>NT Student 2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Lecturer</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1. Blog Postings February to August 2010

One AS student posted five times, the other posted three times, in comparison to the NT students, who posted a maximum of two times. Although this is not a significant difference, the AS students blogged in more detail, and even posted mind maps, to help with idea generation. Both of the AS students have really thought through their options, debating their choice of subject area online, and taking on board comments from the supervisor and LSA. Allowing the LSA to comment on the blog continued their supportive rapport with the student, leading the LSA to gauge how much assistance the student required.

One AS student is almost at the point of producing a literature review, purely through blogging his thought process; he is now beginning to follow up with references and is collecting sources for references which are listed in his blog post. The two NT students have not been so active, and are only at the stage of choosing their dissertation subjects. They have been prompted with comments, but have still not taken their ideas forward. They have not been as innovative in their use of the pilot blog as the students with AS appear to have been.

There has been no pressure on the students to use the pilot blog, but its use has led to the students with AS knowing what their dissertation subject will be, so they can be immediately allocated a relevant supervisor when they return in the new academic year and they can now concentrate on the written content of the undergraduate project, again with support from the pilot blog. If the pilot blog was not there to support the students, it could have taken several weeks for the students to find a dissertation subject, thus eating into their time allocation for the dissertation (Bowman & Scaife, 2010a). The pilot blog is still being monitored; therefore, the findings are not yet conclusive.

Conclusion
This research initially set out to investigate the difficulties that AS students have to overcome in the development of a project proposal and the final dissertation sections of the Undergraduate Major Project. However, through the request of SEDA this was extended to include NT students. The research indicates that in the area of assessment it is apparent that extended pieces of project work with a significant written element are difficult for AS students and for some NT students, and the final mark received may not fully
reflect the students’ capabilities. The research suggested that computer-based learning and assessment systems might significantly help such students. To investigate this further a pilot blog was provided to enable both AS and NT students to develop the proposal section of the Undergraduate Major Project. The usage of the pilot blog has indicated that AS students in particular might benefit from online support with continual formative assessment, during the proposal development process. Following the successful application for a further Learning and Teaching Award the researchers intend to extend the investigation to include the use of blogging for the development of the final dissertation.

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