

An Investigation Into Human-centred Peer-support Education Systems for Students with Learning Difficulties

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Abstract: This research investigates the potential application and use of ICT in the development of peer-support networks centered on learners with Specific Learning Difficulties at third level education. Utilising a theoretical model based on both the social and medical models of disability, it is intended to develop a system that will allow learners to develop through interaction with their peers actionable education frameworks, adaptive learning strategies and reusable learning resources in a safe and contextualised learning environment. Primary research will be performed with the student population of Waterford Institute of Technology as a case study. The longitudinal goal is the improved retention, resilience and performance of the target population.

Keywords: *education, ethics, human-centred design, mixed methodology, specific learning difficulties.*

1. INTRODUCTION

In third level education, two elements can both dovetail and yet remain obstinately parallel: students and technology. Irrespective of their level of ability, student performance can and likely will at some point suffer problems in trying to learn or perform in an academic setting due to the impact of emotional and environmental stressors (Dyson & Renk, 2006). When said student has a Specific Learning Difficulty (SLD) in addition to the aforementioned pressures, that possibility becomes a distinct probability.

SLDs are ‘a diverse group of conditions that cause significant difficulties in perceiving, processing and/or producing auditory, visual and/or spatial information.’ (TCD, 2010) Dependant on country, SLD can also be taken to mean Specific Learning Disability or Disorder. An SLD is not an intellectual or general learning difficulty: students with SLDs are of average or higher intelligence that are prevented from performing to the full extent of their capabilities by perceptual cognitive conditions outside of their control. The conditions cover a wide range of issues, most commonly Dyslexia, ADD/ADHD and the Autism Spectrum Disorders.

This paper will look at the key factors involved in the development of a peer support network for third level students through information communication technology (ICT) and social media. Initially focusing on the background, context and justification of the subject matter, the paper will go on to address the research questions, objectives and framework which will shape the investigation. Following this, the ethical concerns and anticipated methodology in regards to the case study will be stated, closing with some final remarks.

1.1 Background

In an information-heavy setting, students with SLDs are at a disadvantage academically, technically and professionally thanks to the increased cognitive workload generated by the impeded assimilation of information, processes, interactions and of requirements (cf. AHEAD, 2011). With the drive to create a knowledge-based economy and the growth of social media, these students are at risk yet again of being left further behind. With the increased emphasis on the use of information communication technology (ICT) and online learning at third level education, these students are at risk of over-saturation.

This impact is not limited simply to a reduced capacity to perform academically: it can also impact on their socio-emotional domains, often leading to isolation and alienation from their “normal” peers. People living with SLDs tend to suffer from related stigma, both self- and externally-generated. Often carried from a young age and prior to entering third level education, this can affect the confidence and self-image of a student with an SLD, creating long-term repercussions that will affect them beyond of their academic lifespan by continuing into their professional careers where supports will be fewer again.

1.2 Context and Justification of Research

Both historically and at present, the majority of SLD research focuses on primary and second-level education populations to the exclusion of adult and third level education populations. While it is understandable and indeed eminently sensible that interventions be developed for as early an age as possible in

order to minimise the longitudinal impact made by an SLD, this is of little benefit to the pre-existing population who are often diagnosed later in life and as a result are beyond the capacity of support these interventions can provide. With the increased emphasis on digital media literacy (cf. Johnson et al., 2011), this population is instead pushed into a bracket in critical need of prioritisation so as to not see them left behind both within the academic setting and afterwards in the professional job market.

The standard learning environment is typically designed with normative populations in mind, with adaptation rather than inclusion traditionally occurring at a later date for minority/fringe communities such as students with SLDs (Meyer & Rose, 2005). In order for this population to receive a measure of balance, this trend needs to be reversed, with their needs and requirements placed at the nascent stage of system development rather than as an afterthought.

The issue of adaptation and inclusion in system and environmental development is a matter of import not simply due to any particular moral stance or agenda but by legal obligation: these students are legally entitled to the same opportunities as any normative individual by dint of the Equality Act (Office of the Attorney General, 2004) and the National Development Plan (European Social Fund, 2006). If this population is to meet the demands placed on them by an increasingly information-dense learning or work environment, then the dismantling of barriers to their success must be addressed (Williams et al., 2007).

While supports do exist at third level education, they are most commonly operated on an individual level between student and tutor. These tutors rarely, if ever, have an SLD themselves and lack as a result an inherent contextual understanding of the condition. While this is necessary in order to help the student academically, it creates a scenario where the tutor is an outsider to the SLD community and limits their ability to aid the student on a deeper socio-emotional level in the same fashion as a peer from the effective in-group would be capable of. The development of a peer support network would then be the logical continuation of this train of thought, acting to complement existing supports and build a greater degree of in-group agency and self-advocacy by allowing their personal experience to be put to active use and shared contextual support – human reciprocity (Williams et al., 2007) and ‘the social component of learning’ (Browne, 2003) at work.

The social element in this issue should not be underplayed or ignored. Indeed, it is critical to address the often overlooked socio-emotional domains of the population (Department of Education and Science, 2001) as both indicators and contributors to student performance, including but not limited to the self-esteem, emotional development and the relationships of the learner (Aspinwall & Taylor, 1992; Gerdes & Mallinckrodt, 1994). Per White (2002), the divide of SLDs and these domains may often occur due to the emphasis placed on the medical model of disability, which tends to emphasise the positivist approach to the cost of unobservable phenomena, over the social model which holds to constructivist beliefs, in particular the artificial nature of

disability. A key point of White’s paper suggests both disciplines might benefit from considering the supposedly opposing contention. If the network is to follow a human-centred approach and take into account the necessity of the aforementioned socio-emotional domains, then the social model must not only be given credence, but made an active element of the framework and methodology. This is particularly relevant in regards to the fifth stage of Tuckman and Jensen’s 5-stage theory of group formation (1977), ‘adjourning’. Students enter third level education, pass through all the stages but often lack debriefing after completing their exams and before moving onto the next stage of their lives. By creating a peer-support network, the opportunity arises to both address this stage of their lives and also allow the student to be part of an in-group which can potentially carry forward afterwards.

2. RESEARCH QUESTION AND OBJECTIVES

2.1 *The Research Objective*

The primary objective of this research is to investigate the potential of developing peer-support networks, actionable education frameworks and independent learning strategies through information communications technology (ICT) for students with Specific Learning Difficulties (SLDs).

Broken down into its key components, the objective results in the following aims:

- To initiate and monitor self-sustaining peer-support networks through ICT for students with SLDs.
- To develop actionable education frameworks, adaptive learning strategies and reusable learning resources (RLR) for same.
- To subsequently provide the students opportunity to assemble scripts and frames for schemata that can be used outside of the network and education setting.

Further considerations which should be taken into account when addressing the above include the need to develop the framework in a cost-effective and easily replicable state, both for the ongoing research and for any party interested in using or adapting the work thereafter. Ideally, in addition to providing support for the SLD student population, the research should be geared wherever possible to promote and enhance student retention, resilience and performance.

In order to address the broad range of needs borne by the participants, the thematic domains of Integration, Communication and Imagination were identified, based on the considerations of the ability continuum of the SLD population and in particular autistic-spectrum disorders. These domains form the basis of the research framework, working research questions and hypotheses.

2.2 The Research Questions

RQ1. To what extent can the research enable the integration of SLD students into normative populations?

Hypothesis 1a: The development of co-ordinated learning environments will enhance the performance, retention and resilience of students in third level education.

Hypothesis 1b: ICT can be used to safely address and develop the social and emotional domains of students with SLDs.

RQ2. How can ICT be adapted in order to promote a greater capacity for communication/interaction in the SLD population?

Hypothesis 2a: Peer support through social networks can act as a medium to develop communication and intra-personal skills.

Hypothesis 2b: Through the development of communication skills, academic performance and capacity for self-advocacy will be improved.

RQ3. To what extent can ICT and peer-support networks be utilised to promote applied imagination/sense-making in the SLD population?

Hypothesis 3a: ICT and peer-support networks can aid in the development of social imagination / understanding of cause and effect

Hypothesis 3b: This understanding then can be used to develop applied imagination and the capacity for problem-solving.

3. FRAMEWORK

Due to the wide range of SLDs and significant variance of symptoms therein, a Universal Design for Learning (UDL) approach should be adopted (Meyer & Rose, 2005). With the significant growth of ICT in recent years, advances in Assistive Technology (AT) have been significant. AT is 'any item, piece of equipment or product system that is used to improve functional capabilities of individuals with disabilities' (NCTE, 2011). Used in conjunction with UDL theory, these advances can enable and empower the SLD population to master the ICT necessary for the changing job market and economy.

The project will initially use a shared database/message board system to allow participants to interact with each other. An Instant Message (IM)/communication conference system will also be incorporated to allow online conversations in real time. The message board will be sub-divided into several sections in order to allow clear distinction of subject, such as Academic, General and Social. A section for technical support and feedback will also be provided. It is important to ensure that all conversations on the board are threaded so that participants can clearly see who is talking to whom and in regards to what subject. Particular attention will need to be

paid in regards to design and participants whose SLD is visually based (such as dyslexia).

For the sake of maintaining options for adaptation and adjustment as needs require over the course of the study, minimising costs and avoiding conflicting issues of copyright, software used will maintain Creative Commons or be under General Public Licence.

Given the range of disciplines the participants are likely to come from and so as not to conflict with lecture and curriculum-based information, the network will be used initially to promote and develop generic skills necessary for standard college work, such as referencing, formatting, writing skills and structure. Students will however be free to discuss their subjects and offer advice to each other in this regard. As student needs become more explicit and usage more frequent, the framework will shift to specialised, subject-specific curriculum design. Needs assessment can be performed both by using focus groups before constructing the system and by enquiry through the system periodically thereafter.

As a security measure, all systems will be gated so as to prevent parties outside of the study from interfering with the participants or generating erroneous data.

4. ETHICAL CONCERNS

The primary ethical concerns in regard to this research are the protection of the participants, their data and anonymity. Access to raw, personal or identifying data will be available to the primary investigator and supervisor only; any relevant party pre-authorised for access to confidential information regarding the participants, such as the disability officer, will also have access to this data on request to ensure transparency. Fully anonymised thematic and statistical data can be made available to other researchers and external examiners on request, but no contact details or identifying information will be shared or disseminated at any stage, with the exception of the authorised figures mentioned earlier.

Data collected will not be kept whole in one location, but will be separated – usable anonymous data in one external hard drive, personal or identifying data in another, the latter of which will at no time be connected to a network. These hard drives will be encrypted and password-locked. The passwords and access to said data will only be held by the primary investigators. All data collected will be anonymised for usage in the study. Each participant will be assigned a pseudonym should an instance arise which necessitates making reference to individual participants during the course of the study or in documentation outside of the raw data. No personal or identifying data will be kept off-site at any point of the study.

As it is intended to develop a peer-support system rather than an intervention, direct contact with the participants by the primary investigator will be minimal and mediated by the medium of the network. If for any reason the participant feels that they cannot discuss issues that arise through the network, they will be allowed to make an appointment with the

primary investigator to meet in person, but this should not be viewed as a first resort and where possible will have a third party present.

Ethical approval for the research was given by Waterford Institute of Technology (WIT) as the site of the case study in May 2011.

5. METHODOLOGY

5.1 Recruitment

Students will be made aware of the study and the opportunity to participate via materials such as posters and fliers which will be placed/distributed through the two campuses of the Institute. All actions by the primary researcher in this regard will adhere to WIT guidelines.

5.2 Selection Criteria

The participant age range is 18 years of age and up. There is no functional reason for an upper age range. All participants will be registered students of the institute who have an SLD which impacts upon their cognitive domain as identified and vetted by the disability office in the Student Life and Learning unit at WIT. This process is necessary to avoid the collection of data that would be potentially inappropriate for the primary investigator to receive, hold or retain, such as psychologists reports or diagnoses of the SLD. It will also reduce any disclosure, security and data protection issues, and relieve issues regarding evidence of SLDs, since the disability office will already have this information and can confirm or deny the student's status without needing to go into further detail.

5.3 Exclusion Criteria

Students who are not vetted by the disability office in Student Life and Learning as having a SLD will need to be excluded from taking part, both as a measure of legal insulation for all parties involved and as a means of controlling for erroneous data prompted by students who do not have an SLD.

Students who are assigned to the primary investigator in his role as a Learner Support tutor for the disability office must also be excluded in order to not confound data / findings or risk exerting undue pressure on participants to join or continue with the study. Subject to agreement with the disability office, a student assigned to the primary investigator for learning support who wishes to participate in the study can request to be transferred to another learner support tutor where possible.

Students who deregister or defer their position in the institute will also have to be excluded from the system to avoid confounding data later.

5.4 Disclosure and Consent

Informed consent will be obtained from participants when they commence interaction with the study. Due to the nature of SLDs such as dyslexia and the potential for confusion from incorrectly reading the information, the primary investigator will read through the informed consent form with all participants to ensure they fully understand the purpose of the study, what is involved and what is expected of them, particularly in regards to negative behaviour such as bullying and online abuse. The participants will also be given time to ask any questions they may have. Once satisfied, they will then sign two copies: one for the investigator and one for their own records. In the event of a student younger than 18 years of age wishing to participate, parental consent will be sought. When signing the consent form, students will be informed that they can leave at any time and will be asked to sign an addendum to the consent form indicating this desire to leave. This is designed to act as a record of their consent, as an opportunity to debrief the student, giving closure to their participation and also to see how the network can be adapted or improved if possible.

Following confirmation of status by the disability office, the only factor students will need to then disclose to the primary investigator is what their SLD is in order to optimise the system to their needs and to provide context for the findings thereafter.

5.5 Methodology

Provisionally, the methodology that will be employed is to have the primary investigator act as a facilitator within the network, promoting use of the system and contextual support which will be phased out as interaction between the network users increases. This role will be scaled back to that of a moderator ensuring that there is no abuse of the system or the users, and to be on hand as unforeseen or undesirable situations arise. During this period, students will be encouraged to engage with the peer-support network rather than rely solely on hierarchical systems, transforming them into active stakeholders. In order to protect participants from abuse, two functions of the primary investigator which will not be reduced by any extent or at any point are the monitoring of anti-social behaviour and the provision and restriction of access to the network.

Performance metrics and learning analytics will be used to record and analyse student behaviour and interaction with and within the system: their usage, uptake and progress. Given the nature of the network as a de facto online community, cyber-ethnographical methodology and analysis would also be appropriate in tracking participant contribution and behaviour (Ward, 1999; Browne, 2003). Due to the acknowledgement of both the social and medical models, a mixed methodology approach is necessary: qualitative and quantitative data will be respectively sought, based on the data provided through the network and also through feedback from and debriefing of the participants over the course of the study. Inappropriate information provided by participants will immediately be referred to the appropriate authority and dealt

with accordingly. Any action taken will be jointly decided in conjunction with this authority and will adhere to WIT guidelines.

5.6 Projected Time Line and Milestones

The period of June to August 2011 will be used to source the network software that will be used to facilitate the peer-support network. Software will be selected based on ease of use and adaptation to the needs of the target populations. Flexible aesthetic design tools would also be preferable in order to cater to these requirements, as would software that can incorporate the use of pre-existing AT.

It is intended to have the software for the network finalised, tested and debugged for the end of August 2011 so that it can be pilot tested by late 2011, subject to recruitment. The most efficient way to track overall student progress would be to map the data collection phase as closely as possible on the academic year. The initial recruitment phase can in effect begin on day one of Semester 1, with the time until launch being used to brief potential participants, acquire informed consent and to gauge additional features that may be of benefit to the network.

The pilot test phase would operate from the Semester 1 mid-term to the end of Semester 1 and related exams. Subject to the level of modification and adjustment required, the full service may be rolled out as early as the start of Semester 2, ideally to coincide with the release of the Christmas exam results. This initial field research is anticipated to conclude with the end of the semester 2 exams, after which participants will be invited to debrief. This cessation can be delayed if students indicate that it may help in preparation for repeat exams.

Following this, the analysis of findings will begin and consideration will be given as to whether further primary research is required.

6. CONCLUSIONS

The development of a peer support network through ICT for students with SLDs would be of no small benefit in the current economic climate. They are, at the heart of it, a capable and often untapped human resource that can contribute academically and professionally given the appropriate support. While emphasis was placed above on the overt legal entitlement of the population, there is also a moral consideration involved in the establishment of equality. The application of this research in a third level education setting also goes some way to redress the inadvertent imbalance created by parties who are diagnosed with having an SLD later in life. If indeed the support network only goes so far as to give students with SLDs the opportunity to openly discuss their issues with peers and in doing so lessens the emotional weight and impact which their condition may cause, it will have proved a valuable social contribution.

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