Investigation into a Special Needs Student Coping with a Physical Handicap and the Issue of Low-Visual Acuity to Understand How it Affects the Student's Learning and Social Interaction; and Suggesting Possible Strategies to Overcome these Barriers to Learning

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Introduction

In this unique case study I identify **the issue of low-visual acuity** and how it affects a student's learning in an international institution, compounded with physical mobility problems by analysis of the learning/teaching environment. This is of extreme importance as "data from international studies show that approximately 25% of school-age children carry some form of visual deficiency" (Gianini et al, 2004). In the United States of America Kemper et al, (2003) suggest that "correctable visual impairment is the most common treatable chronic condition of childhood" and it is clear that the number of school-age children being diagnosed with poor vision is on the increase. Visual impairment is considered "a large and growing socio-economic problem" (Binns et al, 2012) and eye imbalances in strength occurs in 1.2%[1] of children by seven years of age and occurs equally in males and females. This points to a progressive coherence of knowledge in this matter and a consensus in literature to the issue.

I explain why it is reasoned that the student has low V-A and I suggest some measures to improve her educational situation. While it is impossible for the teacher to improve her mobility issues it was possible to minimize the barriers to learning within the confines of the current school environment. Any techniques or coping skills that can benefit the learner here, may be transferable to further educational situations to advise facilitators in primary, secondary or tertiary educational institutions on how they might manage and support students with similar requirements.

Rosner and Gruber (1985) describe how it is possible to teach how to "provide appropriate services for school-aged children who present, because of reduced visual acuity, unstable binocularity and perceptual skill disorders" which are clear barriers to learning.

[1] According to doctors at Wills Eye Hospital, Philadelphia, the most common divergent strabismus in childhood Divergent strabismus - http://www.surgeryencyclopedia.com/Ce-Fi/Eye-Muscle-Surgery.html#b (accessed November 22nd, 2011)

The Context

The learner chosen for this case study has a mixture of physical barriers to her learning. The primary focus is on her low visual acuity and low vision apparent in both eyes. One being better than the other. In common terms this is known as “a squint” or “lazy eye”, but more correctly termed “strabismus” (Good & Hoyt, 1996) which is a feature in our eyes that we all have to some extent. In this specific student's situation one eye can see only blurry shapes but the other is much stronger. The student wears corrective lenses at all times, predominantly a spectacle wearer.

She has a severely handicapped twin brother who is not capable of attending school and is cared for at home by a specialist carer. Any schooling that can be done with him is done at home by his personal carer. Due to complications at birth both children experienced complications resulting in lower extremity difficulties, making it very difficult for her to walk and making it not possible for him. She herself was home schooled until the age of eight after which time she went to a regular school for the first time in Hawaii. During all of this time she was accompanied by a full-time helper who was also her tutor.

Now, at the age of 15 years old, she finds herself in her freshman year of high school where she must compete with able-bodied students on a level par because the school cannot provide any additional support for her, at this time. She spends most of her day in her wheelchair because of mobility issues with her legs which needs no further explanation in terms of her medical record at this time. She can function with the use of a stroller if required, but not for prolonged periods of time. This makes safety an issue for her in some classes where mobility is required (sciences and P.E.)

Due to both emotional and physical difficulties that she overcame as a child, and the lack of traditional schooling she has difficulty with simple arithmetic and some English comprehension. She is Japanese, born of 2 Japanese parents but has been always educated in English, from even the earliest age. She is 2 years older than other children in her class because of her late start and she is below grade average in most subjects. In this international school context there are multiple issues that all students encounter, including but not limited to: second and third culture peers, who are living in a foreign country (for what can be short periods of time, typically 2-3 years); mixed race or multicultural families; multilingual peers; and a high turnover of teaching staff at the school, annual changes in form tutors. Individual spatial awareness, along with both physical and psychological stresses are factors that could also be considered in this case as they have an effect on students performance but are very difficult to measure and compare. It should be pointed out that this student is not the only low-vision student at the school but she is the only wheelchair user.

Low Vision and Low Visual Acuity in Students

Vision is described as **"a dynamic process that integrates sensory and motor information to derive meaning. A student's ability to use vision for learning is dependent upon many factors, such as the severity and age of vision loss, the timeliness and type of intervention, and the presence of additional disabilities"** Now, as this student has other disabilities it serves to compound her problems in learning because of the her inability to see well and to respond to stimulus as quickly as other able-bodied and of clear unaided visual acuity students. The government of Alberta, Canada suggests ***"student programs and services must be based on the assessed needs of each student"*** which makes perfect sense in any school district or otherwise that can afford the time and personnel to support such a program. As much as the school in question tries to support SEN students to the extent that they are more closely monitored and scrutinized than other students, where deemed necessary by the school principal, they are required to complete progress reports by themselves and meet with teachers to work on agreed "success plans" or "intervention plans" dependent on their current grades if they are at risk of failing subjects. This additional strain on students often becomes another barrier to learning and cause for concern for their ownership of learning as they are asked to adhere to the plans. It may be prudent to schedule additional time and personnel to aid in understanding and collecting of information, of which I shall discuss later.

Smith, (1980) suggested that "because most partially sighted students do not use white canes for travel and because most are able to get around much like everyone else, people have difficulty believing that the student needs to use adaptive methods when utilizing printed materials" (Ibid). also suggesting that "having large print on the chalk board, or the use of enlarged print on an overhead projector may assist a partially sighted student. However, the capacity to read printed materials depends so greatly on conditions such as degree of contrast, brightness, and colour that it is preferable that the student and instructor discuss what methods, techniques, or devices may be used to maximum advantage." These "conditions" vary from classroom to classroom and now, the use of interactive whiteboards (Smart-boards) combined with the need to turn off/down classroom lights to allow this contrast to be clear enough for regular learners makes it difficult for SEN students to be accommodated in many situations. These and similar suggested strategies can be seen in Appendix 1.

Methodology

Yin (1994) defines case study as "an empirical inquiry that; investigates a contemporary phenomenon within its real-life context". In this very unique, qualitative case study, the student was informally interviewed several times. A selection of teachers (3), the mother, counsellor, school nurse and high school principal were interviewed separately, and I, the researcher, as home-room teacher

(form tutor[2]), gave the most crucial evidence and created the experimental plan. By way of counselling and interview, evidence was collected (over a six week period) from all parties. The nurse and high school principal are self imposed "support planners" based on the principals own system of student support. Maternal permission was asked for in a private meeting, for consideration in the study, after I noticed body language mannerisms, repetitious instruction requests from the student and having been in discussion with both parents before, at an open evening at the school. It was clearly obvious that there were concerns from the parents about the challenge of high school after a somewhat easier time in the middle school environment. The student was also asked if she would allow me to discuss her learning with her and to develop some possibilities that may help her with her learning, to which she very cooperatively agreed to. It must be noted that this student is a very happy child from a very loving, caring and supportive family.

Unfortunately, the high school under study does not have any program in place that can properly or officially supports students with any learning difficulties, with second language learning issues or physical disabilities. This paper hopes to shed some light on the school situation and propose solutions that would be of benefit to this student, and any future student.

After the mothers prompt consent was given, I discussed with the student how we might go about collecting information. The provisional plan was for us to spend some time together one day and experience "a day in the life" of this student but the teaching workload and impossible school schedule meant this idea was to be replaced with the interview/counselling path made possible by the fact that I teach both sciences and mathematics to this student allowing me unrestricted access to information for 2 classes in which she is a pupil as well as being able to enact immediate changes without any delays. Teachers' legal rights and responsibilities "Protecting children from abuse" (Berry 2007)

One benefit of the school having no official program set up at this time meant it was simple to execute a reasonable plan with minimal administrative discussion. Under consultation with the support planners (Nurse and Principal) and the counsellor I was able to relay problems and concerns to them that they were unaware of, as well as being able to liaise with individual teachers on her behalf so as to allow awareness of her difficulties to be known, while still held in professional confidence within the faculty of the high school.

The idea of a questionnaire was dismissed as the evidence that may have been collected would have been too rigid and inflexible to serve the purpose of this enquiry (Cohen et al, 2007). Concentrating on only one student and focusing on interview and

[2] Home-room teacher is the international school term used for "Form Tutor" as it is known in England.

counselling, we went about these private discussions with the assistance of two other teachers, one of whom was present in the room during each discussion/interview. When dealing with any individual student, it is appropriate to have another member of staff present at all times in accordance to "the Children Act 1989, and is further supported by the Education Act 2002, which obliges schools and colleges of all sorts to have regard to the promotion of the welfare and safety of all children" *Berry (2007)*. Thorne (1998), Mauthner (2002), Punch (1986).

By monitoring the student in mathematics and science lessons, liaising with participants, interviewing and adapting to responses an appropriate plan was set in place. By providing copies of lesson materials at the start of the lesson, selective seating near to Interactive-White-Board (IWB), screens and workstations, access to information was made simpler. Additional time for working where possible was also granted, including semester examination. Two teachers were already managing the situation well, but some were unaware of the vision issue or had suspicions so explanation was simple and direct.

Data Analysis in terms of related theory and social interaction.

The student manages very well to engage with others but ***"since vision plays a role in the early development of social behaviours and of social cognition, lack of visual cues could lead to difficulties in initiating and maintaining social interactions"*** Zebehazy, K.T. & Smith, Thomas. J. (Feb 2011). This was apparent in a science group-work project in which the student was involved. There were reports from other pupils in the group of four that the student involved failed to fulfil her share of work in the project causing delays in the other students progression and eventual completion of the work set. In interview with the student she reported that "things were fine" and that "there were no problems" that she was aware of. This unfortunately is a clear indication that social cognition of the problems being encountered by the group were not being seen by the student as she was missing visual clues from the group. She explained that the "group is confused about who is doing what" although instructions were very clear. She was alone in this confusion.

The other pupils are fully aware of her mobility problems and they are now beginning to pick up on the cues that this student has been sending out to them, in that she cannot always clearly see instructions as they are given. And that she gives the impression that she can cope well with other subjects when she may be in fact, concealing issues from herself and others without even being aware of it going on. Some element of shame/embarrassment is involved as students try not to make possibly hurtful comments either directly or publicly. The students all like each but were concerned about their individual grades and the possibility of looking foolish at the point of presentation. In order to maintain good social interaction the students were advised that although they were working together in group work that their own individual scores were not dependent on the team necessarily working together,

rather, that they play their own part strongly within the group. The project required all 4 members to work collaboratively in producing a proposal to a company based on the physics involved in a renewable energy type of the groups own choosing. Classwork involved the use of computers, classroom materials and internet resources provided. Work set for outside the classroom over the course of the week-long project was to collaboratively report all information and graphics collected while building for their final short presentation on the Friday. The project was created to allow the groups freedom to decide as a group which one of four roles that each would play and optimize their final scores. Together they had ample opportunity to check on the progress of each other and there was a requirement that they do so each day of the project and log the progress regardless of the amount.

The other three members of the group (a Japanese-Canadian, A Taiwanese-Japanese and a American-Japanese) came to complain that they felt that it be unfair for someone to score well when they felt that a majority of the work had been done by them and that minimal effort had been put in by the other student. The oblivious nature of the response was a clear indicator that the student herself could not pick up the signals which were coming from the group and that there is clearly need for some type of intervention. Individual workloads, computers to work on and time outside of class were all given to every student to make the exercise as accessible as possible. As a qualitative researcher my role required social management skills and in this small conflict a way to "steer a way through the ethical issues that may be raised" (Hammersley, 1993). Specifically, concerns over the students private information and the idea of any preferential treatment.

The solution given by the teacher to overcome these difficulties brought the group together, and taught them the need for a "willingness to communicate".

Cultural differences and previous learning styles add to the confusion within such an international group but as they are all around 14 years old we must also consider their inability to cope with stress and emotion due to their youth. McConnell (1994) explains this well, as "students have to be rewarded for collaborating"; they "have to *see* a real educational purpose for collaborating*"*. This was achieved by them being organised in a way *"that help them collaborate"* and the reconfirmed explanation of individual grades. Kaye and Hawkridge (2003) describe this type of project as "innovative methods of delivery" which are "fit for the purpose".

Motivations for the learner to achieve are her own ambition to become a television announcer, parental pressure and peer pressure. As noted before, she is a very happy child. However, barriers to her learning also include that same parental pressure as well as her low vision. Conley (1996).

In trying to establish the amount of the learning and teaching that has taken place over such a short period of time as was allowed for this project to be completed. In such a

short window of opportunity for change it could be inferred that the changes that were "seen" were conditioned by what this study was looking to show, and require further investigation. Bulmer (1979). The experiment carried out was effective in that the student reported needing less help than previously. She felt more confident in attempting lessons and felt that she needed to ask fewer questions when trying to establish what was the each lesson's requirement. These are evidence of success of presentation of information and improved access. This being said, the amount of actual improvement in learning would require testing and comparison to previous results. Nicholls (1978) wrote that the "concepts of effort and ability are logically interdependent" as one might imagine them to be. However, it can be suggested that causal attributions for success and failure can be linked to behavioural implications to social and moral development

As mentioned earlier, student relationships at international school can be short term, although friendships can be close between students there are very few life-long friendships. In this situation, the student has at least one friend who she spends her day with but this friend is often in different level classes. Different levels of ability mean that friends and supporters are often apart during the school day. The nature of high school teaching is such that students move from classroom to classroom as the daily schedule demands. This is a strain on students and involves trips to lockers and carrying often large amounts of materials. Tardiness between lessons is tolerated in this situation because of the mobility issues with this student, but no designated assistance is given to her in any transition.

Student conditions do not reflect the normal low-vision student because she is also limited by her physical handicap which restricts her movement and the ability to adjust position relative to anything outwith[3] close proximity, without extraneous effort. This means that movement around the classroom, if the situation demanded/conditions changed within the lesson, were more obvious and occasionally disruptive to other students. The student can see well enough to manage this unaided but it is another inconvenience, or barrier, which cannot be helped.

In the first week of the project the student was provided with hand-out copies of each lesson as they were planned that showed exactly what was going to appear on the Interactive White Board (IWB) for both mathematics and sciences classes. This was only possible by the teachers forward planning to print out the document in black ink, on A4 size paper, with font size (22) that was exactly the same as that which would appear in each lesson. This furnishing of the student with the materials at the beginning of each class allowed the student to see the materials while the other students were in the first section of the lesson either at the introduction (normally a non-linguistic representation) section or while the others were writing down the

[3] Outwith – preposition, Scottish, outside; beyond http://oxforddictionaries.com/definition/outwith (accessed Nov 20th, 2011)

lesson title, objectives and learning outcomes, as is now standard in both the Science and Mathematics classes. This is a consideration that was under my direct control and was not supported by the other teachers as it was reported to them by the principal that this was not necessary (in fact, in consultation with the support group the student said that she did not want it highlighted that she had low visual acuity) and that she rather be treated as an equal to the other students. This was in stark contrast to the experiment that was going on in the 2 lessons mentioned previously.

The student felt that she was coping with her disability well enough in some classes but she admitted that in both sciences and mathematics that these were two of her weakest subjects and that she did want to have the additional support. This very reasonable request was accepted and is considered as a signal that it may not be necessary in all situations to provide the same level of support. It intimates that in subjects that the student feels weaker academically and inexperienced that the additional support can be seen as more acceptable as it is perhaps a challenge for all students and could be considered that it would be less embarrassing to accept. This is a factor which was not originally anticipated and now poses the question or questions. Which subjects are the most difficult for a low VA student? Which subjects are traditionally the most difficult in high school? Midgley et al (1989) suggest that **"**Students who moved from high- to low-efficacy math teachers during the transition ended the junior high year with the lowest expectancies and perceived performance (even lower than students who had low efficacy teachers both years) and the highest perceptions of task difficulty".

During the observation period of the student and in discussions with other teachers they suggested that the student had no apparent issues in their class as the student could produce some good quality work. The English teacher noted "she is fine in my class, but of course, I tweak her grade. Otherwise, she would fail every piece of work set." This confirms the need for an intervention and official adjustment of the assessment policy in the school and is obviously a contradiction in terms. How could she be fine, but still need an amendment of her grade? This matches the description by Smith, (1980) but also means that the teacher is forced to change his way of scoring in contradiction to the school assessment policy.

Effective teaching and learning needs to occur and Bishop and Denley (1997) state that "Learning is an active process involving at least one human being-and human beings, particularly young ones, are at times unpredictable, influenced by feelings and above all, different from one another." Onus is on the student to make every effort to learn, which in this case, she does. It must also be noted that ensuring that these practices are adopted by teaching staff will not guarantee effective learning will occur, but should be adopted as good practice. By providing the support suitable for each student we can hope to create the opportunity of accelerated learning. Smith (2000) suggests that the "accelerated learning classroom is one where success and the possibility of success is affirmed at all levels"

The importance of freshman (grade 9) and sophomore (Grade 10) years is highlighted in the importance of grade-point average system in the international academic world as a majority of students go on to study in the United States of America as most schools use this system when considering applications for tertiary education (colleges and universities) Imber (2002), Gilman & Swan (1989) explain that there is no standardized system of grading in the United States itself, and as such, entrance issues are up to the individual institutions and the regulatory authority of each individual state. The GPA is commonly stripped down to core academic performance across five areas; Math, English or Language Arts, Social Studies, Science and finally Foreign Language. This allows students to attempt more subjects than the five core areas and can of course be a consideration for admission to college. Alternatively students can concentrate on only core subjects to improve their chances of a better average.

Students studying in an "International Baccalaureate" school such as this, are standardized worldwide in that they conform to the same standards and are required to study subjects from 6 areas[4], including an Extended Essay in one topic (EE), a Theory of Knowledge essay (TOK) and a portfolio of Creativity, Action and Service (CAS). The latter sections are compulsory for all students and are at the core of the diploma programme in that they teach students how to think about their role in the world, "requiring critical thinking skills and a sense of international-mindedness"[5]. This could be working with the disabled, homeless or other external group.

Lightbown and Spada (2001) "Critical Period Hypothesis" suggests that "there is a time in human development when the brain is predisposed for success in language learning". In considering the subject as a late starter to school and not being a native English speaker it is reasonable to suggest that age of acquisition for her differ from her classroom peers, although their ages are not too dissimilar.

Conclusion

It is clear to see from the study of this student that there is a real need for additional support from individual teachers in their classes and from the school administration to increase the accessibility of information to individual students and to raise awareness of the prevalence of visual impairments and simple steps that can be taken to reduce the barriers to learning.

There ways forward for this student are many and varied and should be supported by the school and the staff. There is a requirement of the school administration to fully explore all of these possibilities so as to support their students and to educate

[4] Group 1 – Language Art. Group 2 – Second Language. Group 3 - Individuals and Societies. Group 4 - Experimental Sciences. Group 5 – Mathematics or Computer Science

[5] http://www.ibo.org/diploma/ accessed January 2nd 2012

themselves in the signals and mannerisms that students with these kinds of problems in order to provide an even platform on which students can compete and be quality assured of the courses in which they are enrolled and the parents pay for. This will increase the authenticity of the school and their students' efforts and eventual grades.

Lightbown and Spada (2001) explain the importance of "In a classroom, a sensitive teacher, who takes learners' individual personalities and learning styles into account, can create a learning environment in which virtually all learners can be successful in learning a second language". Whether in their first or second language, students can study knowing that all efforts are being made to provide the best learning environment possible. Each course should be quality assured as being fully accessible and level appropriate as described by Chambers (1995), Azuma (1991).

It is very possible to provide support to students with low vision and other disabilities without too much need for specialise equipment or training. Simple changes to classroom management, forward planning of lesson (and classroom) materials, and open discussion between students and teachers can provide a better learning condition and boost confidence for success. The main focus in any school must be the welfare and education of the students. Teachers should continually be willing to adjust their practice to accommodate students' needs, and administrators, should promote professional development opportunities for teachers and manage scheduled time to facilitate this need.

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