

# **Student Performance and Spatial Orientation – a Qualitative Perspective.**

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## INTRODUCTION:

This study arose as a result of an observation made by one of the researchers, Randall Gibson (RG) in the course of his duties as a tutor at Wellington Technical Institute (Weltec). While supervising students completing assessment tasks, he noticed that the students seated on the left side of the room, as perceived by him, finished their assessment and left the room far sooner than their counterparts on the right. Once he had noticed this, he collected data for a number of assessments, over a number of years, and from different courses. The data was analysed, and the effect was proven to be present to a statistically significant degree. This work was reported at the 15<sup>th</sup> annual NACCQ Conference in July 2002, and is included in the proceedings of that conference (Gibson, 2002).

A further study was planned to investigate a number of possible causes of this effect. These included:

1. Room geography – proximity to the door. It may be that some students wish to be close to the door.
2. Teaching style – visibility of the board. Students habitually sit in a similar position in assessment as for classes, and it may be that students on the right (for a right-handed tutor) may not see the board during class as well as those on the left.
3. Left/right brain dominance effects. An hypothesis is that left/right brain dominance affects preference for seating position, and possibly assessment time. IT topics could attract left-brain dominant students, providing a chain of preferences leading to the observed effect.

All three hypotheses could be tested with the aid of a collaborator teaching in a different environment. At this point Judy Williams (JW) was approached to participate. She teaches at the Christchurch College of Education (CCE), in the School of Primary Teacher Education, and had noticed (after hearing of RG's work) that the students she was supervising left the right side of the room earlier. It may be that teacher training attracts more right-brain dominant students, which would be a useful comparison with the Weltec students. JW is left-handed while RG is right-handed. They also proved to have different brain dominance from each other. JW is extremely right brain, while RG is equally strongly left brain. The classes each habitually teach in have the doors in a variety of positions.

The study was set up in several phases, which would make use of a mixed methods approach to research (Brannen, 2003). Data was gathered from both institutions, first by means of a survey from participants. This was followed by observations of assessments at each institution, following the model set up by RG for his 2002 paper. Statistical analysis was carried out by RG, and has been reported at the NACCQ annual conference, 2003 (Gibson & Williams, 2003).

This paper reports on some of the data collected for the study carried out by RG, but not used by him. It includes results from interviews carried out with the Weltec participants. It addresses the hypothesis that the handedness of the tutor may have a bearing on the effect. It also explores the extent to which students are aware of a seating preference, and if so, the reasons they ascribe to this. The paper concludes by outlining some areas for further research, and/or data analysis.

## RESEARCH DESIGN

Questions which framed the aspect of our research reported in this paper were:

- How stable are seating preferences for the same group of students over different courses?
- Are students aware of a seating preference in relation to their own learning?
- If so, what reasons do they assign for such a preference?
- What are the implications for educators of seating preferences amongst their students?

Some of the data collected in 2002 for the quantitative aspect of the study was either in an unsuitable form to be entered into the database, or did not cover a sufficient number of the database fields (ie it was incomplete) to be useful in that forum. This data was, however, suitable for a qualitative report, which could be used in conjunction with the quantitative study to enrich and deepen our understanding of the initial observed effect and its implications for educators. Further data were gathered by means of interviews with students at Weltec, which aimed to explore student self-perceptions of seating preferences and the reasons, if any, which they assigned to their preferences. Interviews with students at CCE could not be arranged in a suitable time frame to include their voices in this paper, but interviews with them are planned for the near future.

Data for the studies were gathered during Semester 2 of 2002. Populations from both Weltec and CCE were sought to participate in the study. Criteria for participation included attendance in classes which

- could be monitored by the researchers
- formed a distinct and separate part of the qualification being undertaken
- had one or more formal assessment tasks, completed face-to-face with the tutor within a set time frame.

Suitable classes of students (known as 'streams' at Weltec and 'groups' at CCE, but indicating a group of 30+ in either case) were approached early in their courses of study. Those who consented to be involved in the research completed a short left/right brain dominance survey, and gave details such as their age, gender and handedness. During assessments the researchers noted whereabouts in the room students sat, and the time at which they handed in their assessment responses. Notes relating to extraneous factors which may have affected student responses were also kept. All the rooms used by classes participating in the study were measured, both for their dimensions and for the placing of the seating.

Later in the study, in early 2003, students were again approached, this time to take part in informal interviews. Students at Weltec, who were interviewed in May 2002, included some who had taken part in the original data collection, and some who had not, as they had only begun their course in 2002. A planned part of the data collection is to interview students at CCE who participated in the original research, as it is these students who provided much of the data suitable for the qualitative aspect of the study. In particular, one of the groups at CCE was observed on three different occasions in different courses, taught in two different rooms by two tutors. The data related to two of these observations was considered to be incomplete for the purposes of the database and subsequent statistical analysis. However, the performance of one group of students in such a variety of settings is highly relevant to confirming and/or eliminating some of the factors noted in the original hypotheses. The opportunity to enrich the study by interviewing this group of students about their seating preferences could not be passed up! Unfortunately this group of students was undertaking five weeks of Professional (teaching) Practice in schools scattered all over Christchurch and

the top of the South Island and could not be interviewed in time for their responses to be included in this paper. They will be interviewed at a later stage.

Preliminary findings from these data are outlined in this paper. They include seating trends and patterns, based on observations taken at CCE in 2002, and some information about seating preferences extracted from the interviews carried out at Weltec.

## RESULTS:

Five observations of students were made at CCE, three with one group (Group A), and each with two other groups (Groups B and C). Twenty-two members of Group A participated in the research, from a class of 29 students. 21 of the 24 class members of Group B participated in the study, while only 9 out of 23 members of Group C participated.

The observations took place in three rooms: two observations each in two rooms and one in the third. All the observations were of first year students in courses based on the English Curriculum document. Students were quite anxious about these assessments, for varying reasons. Two of the courses were assessed by one task each, which was completed in-class. One was open-book, and one was closed-book. Both were graded, using an achievement-based model of assessment. Although the third assessment was only one in a series of assessed tasks for the course, a competency-based model of assessment was used, so that the task was effectively marked on a pass/fail basis. All the courses concerned were compulsory papers for the qualification the students had enrolled for. Students clearly saw these assessments as being 'high-stakes'.

The results overall of these observations showed that more students sat on the opposite side of the room to their brain dominance, or brain dominance tendency than on the same side as their dominance. A total of 82 individual observations were recorded, with 26 individuals sitting on the same side as their dominance, and 36 on the opposite side. A further 20 individual observations were of students with 'balanced' results (ie 10 responses on the questionnaire for both right and left dominance). Surprisingly, 13 of these sat on the left side of the room.

The results of Group A are interesting. Eight of the group of 22 always sat on the same side of the room, regardless of the topic, the tutor or the room itself. Another nine sat twice on one side of the room and once on the other side. Of these, six sat more often on the opposite side of the room to their brain dominance or tendency, and the other three were 'balanced' who chose to sit more often on the left. Absences and incomplete data recording meant that the remaining five students were observed only once or twice, and so a clear preference for one side of the room or the other could not be determined.

There was a clear indication of a difference in seating preferences for early and late leavers in each group. Group A, for example, showed four students from the left side of the room were amongst the first third of the group to leave the competency-based assessment, and only one from the right; while the last third to leave the same assessment was made up of five from the right and three from the left. This pattern was repeated for one of the two achievement-based assessments, but the results for the other appeared to be more evenly spread. A similar pattern was observed for Group B, while Group C results were inconclusive. This was not unexpected, as the sample from Group C was so small.

One hypothesis of the study was that the position of the door may affect the positions chosen by the students. The door was situated in a different position for each room, but on the same side of the room. The doors were to the left front of the students, to their left rear, and to their left centre. In relation to the layout of the seating, access to the right side of the room was easier for the two rooms with the doors at the front and the back than for the room with the door in the centre. The results in relation to door position for the students at CCE do not clearly support or eliminate the hypothesis that door position may affect student seating positions.

Ten Weltec students, six males and four females, were interviewed in groups about their preferred seating positions. Five were left brain dominant, or had a left brain tendency; five were right brain dominant, or had a right brain tendency. None were 'balanced'. To protect confidentiality, they were coded: M or F to indicate gender, followed by a randomly assigned letter from A to J. The codes do not reflect the order in which the interviews were conducted, nor do they identify which other students were present during a particular interview. The codes were matched to brain dominance, with these results:

Right brain dominant: Students FB; MC; ME.

Left brain dominant: Students FI; FH

Balanced, right brain tendency: Students MJ; MG.

Balanced, left brain tendency: Students MA; FD; MF.

At the beginning of each interview, the students for the first time had the purpose of the research and a brief outline of the original observed effect described to them. None had been aware of the purpose before this, and so had not prepared responses prior to the interview. Many expressed their surprise at the findings of the research to date. A common response to our questions was that they had not specifically considered their own seating behaviour. However, when asked if they had a preferred seating position, all answered that they did. All seemed to be more aware of a preference for sitting to the front or rear of a room than they were of a preference to sit left or right. The researchers were aware that the ideas under consideration were likely to be new to the participants, and therefore decided the interviews would be of a semi-structured nature, to allow students 'response time'. The premise was that students would be able to consider the new ideas during the course of the interview and would be able to add to their responses in a considered way towards the end of the allotted time. This technique did in fact work well. Interviews in general lasted  $\frac{1}{2}$  -  $\frac{3}{4}$  of an hour, and covered two main questions. These were:

- where do you prefer to sit in a learning environment?
- Why do you prefer to sit there?

Responses relating to the front/back dimension of a room were often specific.

- "I sit towards the back, so no-one can see me when I answer ...and to escape the sight of the tutor – so I can express my feelings, without him hearing" (Student MA).
- "I sit in the front – everywhere, not just in a classroom. This is a childhood habit of mine" (Student MJ).
- "I don't sit up the back – I can't hear, and I don't like the distractions (Student FJ).
- "Personality may affect where you sit. If you want to muck around, you might sit at the back" (Student MA).

When asked about their preference for being seated left, right or in the middle of a classroom, students were slower to respond, but did indicate a preference. Some of these were very specific:

- “I sit on the left side of the room – to the tutor’s right” (Student FB).
- “the middle – or to the left if I have to” (Student MJ).
- “I always sit away from the door – to my left...I sit in the third seat from the front, and as far left as I can get” (Student FI).
- I sit on the left – it’s closer to the door” (Student ME).

When asked why they preferred to sit to the left or to the right, initial responses were likely to be along the lines of “I don’t know – I just do”. However, towards the end of the time, students would often elaborate on an earlier response.

- “I sit on the left to avoid the tutor obstructing my view of the OHP” (Student FH)’
- “In the computer labs, I don’t like being near the door, but in one particular computer lab, I do sit by the door because it’s on the left and by the window...I can handle that” (Student MG).
- “In that lab, I don’t like that seat because of the window – it’s distracting” (Student FH).
- “On the left so I can have space on the table in front and some to the right to have room for writing” (Student FH).

Students often said that their preference for sitting to the left or the right of a room was usually strong enough to overcome disadvantages such as being unable to see the whiteboard or the OHP clearly. Under certain circumstances, some would consider moving. One student, MJ, who had expressed a strong preference for sitting in the front of a room, had seated himself to the left in a computer lab. He explained that this was in response to a practical situation, and a cultural situation. He couldn’t sit in his preferred central area in the computer lab, because that would mean he had his back to the tutor, which was culturally inappropriate for him, as tutors, and all teacher, should be shown the utmost respect. He chose not to sit on the right of the lab as the machines on that side had reflections from the window obscuring their screens.

Another student, ME, said that he would move to get a better view if the OHP notes were important, but not for ordinary notes which are available on the computers anyway. Student MF said that he would move if he found that his friends had all seated themselves in a different area from their usual one, but would feel ‘weird’ and ‘uncomfortable’.

Most students expressed feelings of discomfort, ‘weirdness’ or irritability if they were unable to place themselves in their preferred position, for whatever reason. One, Student MA, told of a time when he had been told to sit in a seat in the right front of the room for an assessment. He found that he was unable to complete the assessment to anything like his usual standard. He answered a few questions, then tried to check his answers, and skimmed through the remaining questions, but felt so uncomfortable, and became so angry, that he left the assessment extremely early. He was being interviewed in a group of four other students. When asked what they would feel like in a similar situation, the students responded quickly and firmly that they would need to do a ‘resit’, as it was unlikely that they would pass the assessment! However, some of the other students said that they did not think that they would be affected too much by being somewhere other than their preferred seating position, especially if they were able to self-select an alternative. If a seating pattern was imposed on



them, the strength of their reaction would depend on how far the new seating position differed from their preferred position.

An interesting finding relates to a comment by Student ME, that his seating preference is affected by the tendency of many tutors to 'scan' the class more to one side than another, as he does not like to be 'stared at'! He has noticed that many tutors like to look to the right half of the class, as seen by the students, so he avoids sitting there. He still feels comfortable speaking up and responding to questions, but dislikes being the focus of attention to that degree. The possibility that scanning direction could be a factor involved in seating preferences was not considered when setting up the current study, and could usefully be followed up.

## DISCUSSION

The experiences of the students involved in this study have shown that most students do have preferences as to where they sit. These preferences may be strong enough for students to overcome various disadvantages, such as being unable to see any notes on the whiteboard, or even the OHP. Students gave a variety of responses as to what circumstances would encourage them to shift. It appears that the reason would have to be quite important to override the preferred position. There is no indication that any of these students are deliberately sitting in a position which would allow them to avoid or promote interaction with the tutor and/or classmates, even if the nature of the course is seen as encouraging this. Possibly suggestions about an 'action zone' in the classroom and its use, may be unnecessarily stressful for some students. (Good & Brophy, 1984; Stewart & Evans, 1997). Put simply, the suggestion is that "...because students seated in the center and front often have more interaction with the teacher, the seating arrangement should occasionally be changed to give all students the opportunity to sit with different peers and in different locations, always ensuring a clear view of presentations" (Stewart & Evans, 1997, p. 2). This study shows that many students may feel, at the least 'uncomfortable' about such interventions in their seating patterns – surely not a state of mind which is likely to be conducive to quality learning! Furthermore, many studies discuss interventions instigated by the teacher involved, with little or no input from their students as to their preferences (Conners, 2001; Philpott, 1993; Stewart & Evans, 1997; Wall, 1993). An exception to this trend was a study of children's views of their working environment (Kershner & Pointon, 2000). Kershner and Pointon concluded that children do "...know a lot about how classrooms work – individually and as a group...groups of children and individuals have different beliefs about the classroom" (Kershner & Pointon, 2000, p. 7). If this true of the 9-11 year old children involved in Kershner and Pointon's study, it is likely to be even more true of the tertiary level students (many of them 'mature' students) who participated in the current research. It seems likely to be counter-productive to ignore - or worse, try to manipulate – seating patterns and preferences and still expect students to maximise their learning potential!

The results show that the handedness of the tutor, and consequent obscuring of written notes, may have an effect on the seating preferences of some of the students. However tutor handedness does not explain the effect observed, as some students specifically stated that they would retain their preferred seating position in spite of their inability to see the whiteboard. The motivation to see was commonly insufficient to promote a change in seating. It seems that the second hypothesis cannot be confirmed.

This report has endeavoured to explore some of the trends found in the data, with a particular emphasis on the more qualitative aspects evident. It is by no means a final or conclusive report, and could well be the basis of further work in this area. Some possible areas to explore are:

- As mentioned earlier, the CCE students should be interviewed, so that their 'voices' and comments can enrich, confirm or oppose the findings from their Weltec counterparts.
- This report needs to be integrated with the quantitative study carried out by the researchers in order to confirm or annul the hypotheses developed to explain the original observed effect.
- The possibility that the tendency of the tutor to 'scan' to one side or another is a factor in seating preferences needs to be explored.
- It could prove insightful to investigate the strength of the motivation needed to overcome an established seating preference on the part of an individual.

We'll leave you with one parting thought: What made you choose to sit where you are now, to listen to this presentation?

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