THE UNIVERSITY OF
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Te Whare Wānanga o Waikato

School of Education
Te Kura Toi Tangata

Wilf Malcolm Institute of Educational Research
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ON-TASK VIDEO ANALYSIS PROJECT

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On-Task Video Analysis Project

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FURNWARE

Background

The scope of this exploratory study was to identify on-task activities with Bodyfurn desks and chairs from video recorded classroom observations. According to Gibbs, Friese and Mangabeira (2002) "the use of such technology raises issues of interpretation, impact and validity that researchers need to deal with" (cited in Shrum, Duque & Brown, 2005, p. 3). A comparative approach was decided upon, whereby existing furniture would be compared with Bodyfurn desks and chairs. The setting for the video recorded observation was one secondary school classroom. Three different age levels were observed (Year 9, Year 11 and Year 12). A Video analysis software programme called *Studiocode* was used in this study to analyse classroom video data.

This report will outline the coding system used to analyse video data and how it was applied and then present the results of the video analysis and limitations of the findings. Recommendations will also be made as to how future research about this subject may best be carried out.

Analytical tools

Video-based research is a valid research approach but managing the data it produces can be problematic. The video data for this exploratory study was coded and analysed using a software programme called Studiocode, which is a multi-functional digital management system. It is a modified version of Sportscode[1], which is software used to analyse sporting events. Video data can be captured, coded and analysed as well as being archived and used for presentational purposes.

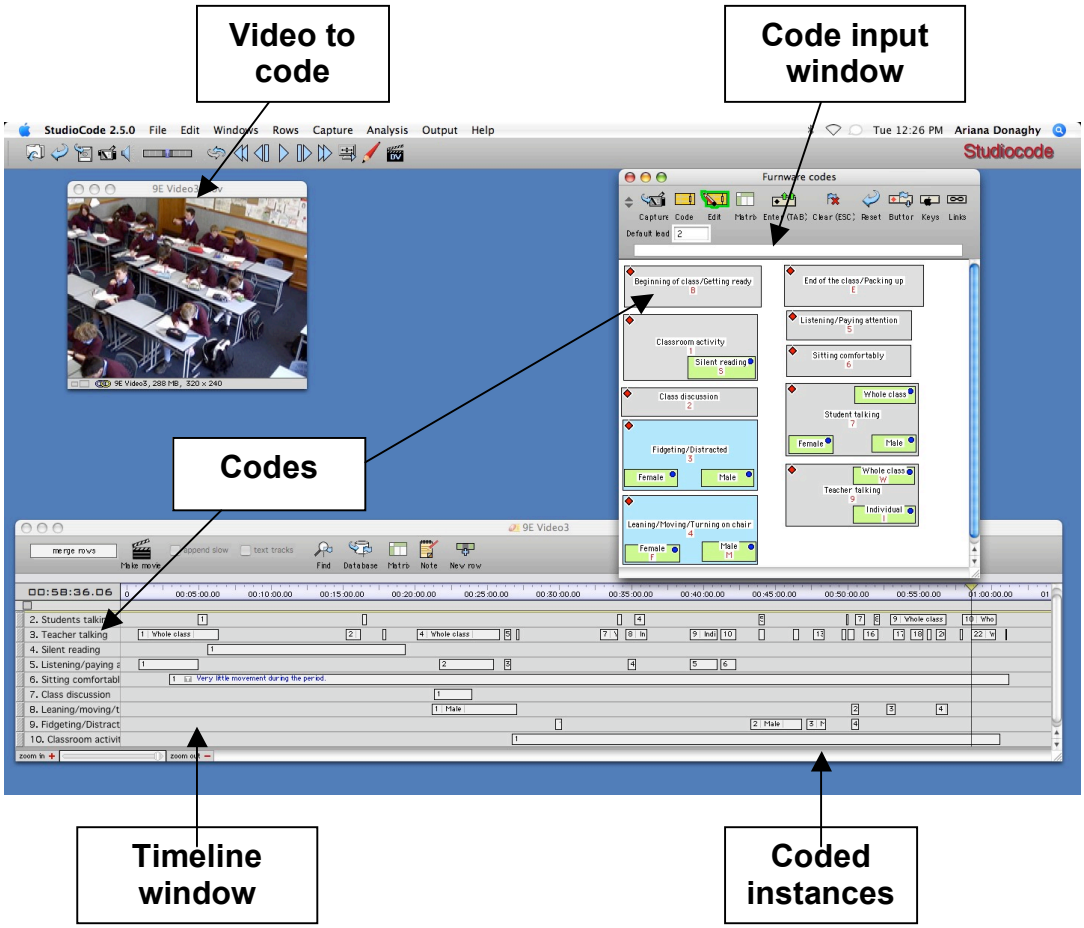
There are three main components of Studiocode: Code Input window, Timeline window and Movie window; all of which need to be coded (See Figure 1). The Code Input window is often referred to as the starting point for video analysis because it is where the buttons for coding are stored. There are two types of buttons: code buttons and label buttons. Code buttons are represented with a diamond symbol in the upper left hand corner and are used to define events.

[1] http://www.sportstec.com

When these codes are selected, while watching the video, they appear as Instances in the Timeline window. Label buttons are represented with a circle symbol in the upper right hand corner. They are used as description or consequence buttons. Label buttons are attached within a coded instance. In this study, male, female, whole class and individual students were used as label buttons. This added another layer to the video based analysis.

Once the video has been coded, using code buttons, the sequence of events can be viewed in the Timeline window. The timeline shows when a student leaned on their chair and whether they were female or male. Armstrong and Curran (2006) described the use of timelines as "Visual presentation of patterns of similarity and difference across the sequence of lessons video recorded." (p. 342).

Figure 1 Studiocode components



One of the analysis tools of Studiocode is the "Code Matrix", which shows the timeline information in a two-dimensional table. The Code Matrix enables quick examination of the data. More detailed analysis can be carried out using a Data List. This provides a complete list

of events in the order they occurred. The researcher can also use frequencies which record the number of times each timeline code was used, how much time those actions took and the mean time for each action.

When the video recorded classroom observations are converted into QuickTime format, a suitable coding system can be formulated using Studiocode. The aim of the codes is to identify key trends as well as situate the classroom activities in context. Due to the flexibility of Studiocode software, it is easy to modify codes during the course of the study. See Table 1 for the final set of codes.

Table 1 Furnware Codes

Codes	Labels
Beginning of the class/Getting ready	
Classroom activity	Silent reading
Classroom discussion	
Fidgeting/Distracted	Female Male
Leaning/Moving/Turning on Chair	Female Male
Sitting comfortably	
Students talking	Female Male
Teacher talking	Individual Whole class
End of class/Packing up	

Findings

The following findings were drawn from eleven video recorded classroom observations of Year 9, Year 11 and Year 12 classes. Each video recorded lesson was one-hour in duration. The quality of the video recordings showing the existing classroom furniture and the video recordings showing the Bodyfurn furniture differed greatly. The video recordings of the former appeared slightly out of focus. In addition there was a different camera angle between the two sets of recordings. The earlier recordings featured fewer students on average with only a small portion of the classroom visible. A larger section of the class was captured by the video recording of the use of the Bodyfurn furniture, but this covered a different part of the

classroom. One difficulty this raised was that the gender composition of the total class is unknown. The earlier recordings feature more boys and it is unclear if this reflects the total composition of the class, or if this is simply the section of the room the boys congregate in. The later recordings, showing more students, feature a much higher proportion of girls.

Table 2 Coded video data

	Year 9	Year 11	Year 12
Existing chairs	Two videos	One video	One video
BodyFurn chairs	One video	Four videos	Two videos

YEAR 9

Three video recorded classroom observations were coded and analysed using Studiocode. As shown in Table 2, two of the recordings were of a Year Nine classroom with the existing chairs and one recording with the Bodyfurn chairs. The results showed a noticeable difference in the number of instances of students leaning/moving/turning in chairs as well as fidgeting /being distracted.

Video 1 (Existing chairs)

The camera angle for this video recording meant nine students (eight male, one female) were watched and their movement coded. There were a high number of instances where students were fidgeting/distracted and leaning/moving/turning in their chairs. One male student in particular leaned on his chair a number of times. In addition, a high number of instances recorded students talking. The class had a relief teacher, so the disruptive nature of some of the students may be attributable to this situation.

Video 2 (Existing chairs)

The class began with 15 minutes of silent reading followed by the teacher reading to the class and engaging in a discussion. The movement of twelve students, (nine male, three female), were recorded in this classroom observation. During the course of the class there was very little movement, with students on task for the first forty minutes. All fourteen instances of leaning/moving/turning were male students with the average episode lasting 26 seconds. Moreover, there were fourteen instances of fidgeting/distracted and they were also male students. The average instance of fidgeting/distracted lasted ten seconds longer than that of leaning/moving/turning. It must be noted that due to problems converting the video format, only the first forty minutes of the class could be coded.

Video 3 (Bodyfurn chairs)

This video observation was based on the movement of fifteen students;(eight male, seven female). The students appeared to be sitting comfortably during the lesson with very little movement during the hour. The majority of students were on-task and it was only during the last ten minutes of the lesson that students began to be distracted. During this latter part of the lesson, one male student leaned on his chair on four occasions. It should be noted that although three of the four instances were for short periods of time, (less than 50 seconds), the first instance was for the duration of six minutes. Four instances of fidgeting/distracted were also recorded attributable to the same male student.

Tables 3 and 4 that follow, show the number of instances of leaning and fidgeting for all three video observations. There was a noticeable difference between the students' use of the existing furniture and the Bodyfurn desks and chairs.

Table 3 Instances of leaning/moving/turning

EXISTING CHAIRS			BODYFURN CHAIRS
Number of instances	Duration		
	9E Video1	9E Video2	9E Video3
1	12s	25s	5:51s
2	14s	18s	30s
3	2:01s	1:34s	34s
4	10s	1:27s	45s
5	9s	1:05s	
6	29s	4:09s	
7	21s	1:54s	
8	8s	3:35s	
9	17s		
10	37s		
11	9s		
12	16s		
13	12s		
14	9s		

Table 4 Instances of fidgeting/distracted

EXISTING CHAIRS			BODYFURN CHAIRS
Number of instances	Duration		
	9E Video1	9E Video2	9E Video3
1	2:12s	19s	23s
2	50s	1:15s	3:31s
3	10s	1:34s	1:17s
4	25s	54s	30s
5	9s	1:54s	
6	2:01s	1:25s	
7	43s	1:13s	
8	22s	22s	
9	40s	58s	
10	20s	11s	
11	21s	46s	
12	12s	32s	
13	8s	46s	
14	9s	48s	
15		45s	

YEAR 11

This section discusses the five video recorded classroom observations of the Year 11 class. The first video showed 21 brief episodes of students leaning/ moving/turning on their chairs. The second video showed students on-task with very little movement of students.

Video 1 (Existing chairs)

Seven of the nine students in view of the camera, moved in their chairs throughout the lesson (in total 4 male and 5 female students were observed). This was reflected by the twenty-one instances of leaning/moving/turning. A significant portion of the movement instances comprised of male students leaning on chairs. The average instance of leaning/moving/turning on a chair lasted for 1 minute and 31 seconds. Five instances of female students moving in their chairs were recorded. Male and female students tended to behave differently. The male students tended to turn and talk to other students (typically behind them). The female students tended to lean back in their chairs. There was also a high level of distraction in the classroom. It should be noted that the level of movement and fidgeting could be attributed to the students having a relief teacher for the lesson.

Video 2 (Bodyfurn chairs)

Fourteen students were observed during this lesson (4 male, 6 female). The students' lack of movement suggested they were sitting comfortably for the hour. The ten instances of movement that were recorded were of male students. The average time spent leaning, moving /turning on a chair was 31 seconds. Similarly, the four instances of fidgeting/distracted recorded, were attributable to male students. Generally, the class was on-task for the lesson. The instances of movement and fidgeting appeared to be isolated cases and not indicative of the class as a whole.

Video 3 (Bodyfurn chairs)

The fifteen students (6 male, 9 female) were generally on task for the duration of the hour. Students appeared to be sitting comfortably with very little classroom movement. The ten instances of leaning/moving/turning lasted, on average, 40 seconds. In total, there were eight instances of male students and four instances of female students leaning on their chairs. Within that total, there were two instances when a female and a male were recorded leaning/moving/ turning on their chair. As noted in earlier observations, males tended to lean back in their chairs rather than moving or turning.

Video 4 (Bodyfurn chairs)

This video recording consisted of observing seventeen students (6 male, 11 female) watch a movie. Most students looked as though they were sitting comfortably, with very little movement, One exception was a female student, who spent the entire lesson leaning on her desk and the other was a male student, who spent the first half of the lesson leaning on his chair. There were only two recorded instances of fidgeting/distracted and those lasted no more than 47 seconds. The lack of movement in this class may be attributed to the nature of the classroom activity. Without a video recording of the same class watching a movie in the existing furniture; it is difficult to draw any further conclusions.

Video 5 (Bodyfurn chairs)

The thirteen students (2 male, 11 female) in view of the camera for this observation were distracted and off-task for a significant portion of the lesson. For example, the students spent 37 minutes off-task talking. One female student spent forty minutes half-turned in her chair so she could speak with the student behind her. However, from the researcher's observations, the rest of the class appeared to be sitting comfortably and with very little movement. Six instances of

fidgeting/distracted were recorded with the average length of time being 4 minutes and 30 minutes. Five of those fidgeting instances were of the same male student.

Table 5 Instances of leaning/moving/turning

EXISTING CHAIRS		BODYFURN CHAIRS			
Number of instances	Duration				
	11E Video1	11E Video2	11E Video 3	11E Video 4	11E Video5
1	15s	40s	24s	54:00s	42:07s
2	3s	48s	12s		
3	45s	1:23s	3s		
4	27s	24s	18s		
5	14s	31s	35s		
6	9s	22s	33s		
7	21s	18s	1:58s		
8	8s	9s	2:23s		
9	6s	32s	35s		
10	5s	8s	15s		
11	5s				
12	14s				
13	11s				
14	8s				
15	1:45s				
16	51s				
17	1:19s				
18	9:20s				
19	4:31s				
20	19s				
21	10:51s				

Table 6 Instances of fidgeting/distracted

EXISTING CHAIRS		BODYFURN CHAIRS			
Number of instances	Duration				
	11E Video1	11E Video2	11E Video3	11E Video4	11E Video5
1	*57:00s	1:26s	6s	45s	1:01s
2		1:35s	1:28s	27s	3:11s
3		47s	10s		2:06s
4		27s	12s		9:28s
5			19s		4:28s
6			2:00s		6:48s
7			29s		

YEAR 12

As with the other years there was a noticeable difference between the existing furniture and Bodyfurn furniture in regard to the number of leaning/moving/turning instances recorded. The first video showed 29 instances of movement, the second video showed 13 instances of movement and the third video showed six instances of movement. The latter was with the Bodyfurn furniture. However, the number of instances of fidgeting/distracted increased with the Bodyfurn furniture. This may be attributed to the disruptive nature of the lesson with students off-task for most of the lesson. Only one of the female students from this video appeared in the subsequent videos showing Bodyfurn furniture.

Video 1 (Existing chairs)

The video recording began with five students. Seven minutes into the lesson, a male student moved into view thus making three males and three females the focus of this observation. Students were asked to think of triggers for moments of their past. The teacher suggested music as a way of remembering the past. Generally, students were on task for the lesson. However, due to the nature of the activity the students were constantly moving or turning in their chairs to discuss ideas with other students beside or behind them. Twenty-nine instances of leaning/ moving/turning were recorded with the average length of an instance being 39.88 seconds. The majority of the movement related to a specific male student (sitting at the front of the class) who kept turning around to speak with a student sitting at the back of the class.

Video 2 (Bodyfurn chairs)

This video recording focussed on thirteen students (5 male, 8 female). Twelve brief instances of leaning/moving/turning on chairs were recorded. The average time was fourteen seconds. Thirteen instances of a three different male students fidgeting or being distracted were also identified. One of those male students spent eight minutes looking around the classroom on one occasion. The average episode of fidgeting or being distracted lasted 1 minute and 38 seconds. However, it is not known if the number of movement and fidgeting instances necessarily reflected the students' level of comfort There appeared to be very little movement with most students sitting comfortably for the hour-long lesson.

Video 3 (Bodyfurn chairs)

This classroom observation showed ten students distracted for most of the lesson (4 male, 6 female). Eighteen instances of fidgeting/distracted were recorded, with the average episode

lasting 1 minute and 32 seconds. The students were talking off-task for 36 minutes of the hour. Six instances of leaning/moving/turning were recorded, of which four were male students and two were female students. Three of the six instances were caused by the same male student leaning back in his chair. One of these instances lasted for 2 minutes and 24 seconds. The two instances above that were recorded as female, involved the same student. Both these instances lasted no longer than 22 seconds.

Table 7 Instances of leaning/moving/turning

EXISTING CHAIRS			BODYFURN CHAIRS
Number of instances	Duration		
	12E Video 1	12E Video2	12E Video3
1	19s	22s	16s
2	15s	14s	31s
3	33s	13s	21s
4	13s	15s	2:24s
5	39s	9s	32s
6	15s	14s	20s
7	1:02s	7s	
8	10s	12s	
9	29s	10s	
10	1:53s	31s	
11	39s	8s	
12	19s	15s	
13	5s		
14	19s		
15	11s		
16	28s		
17	11s		
18	12s		
19	3:28s		
20	37s		
21	48s		
22	22s		
23	10s		
24	1:51s		
25	20s		
26	12s		
27	1:54s		
28	2:16s		
29	21s		

Table 8 Instances of fidgeting/distracted

EXISTING CHAIRS			BODYFURN CHAIRS
Number of instances	Duration		
	12E Video 1	12E Video2	12E Video3
1	15s	1:03s	4:41s
2	33s	27s	2:20s
3	13s	8:17s	1:37s
4	23s	13s	1:48s
5	19s	3:05s	2:39s
6	1:47s	2:10s	56s
7	12s	18s	54s
8	1:54s	27s	21s
9		2:06s	1:10s
10		12s	2:42s
11		1:11s	38s
12		23s	33s
13		51s	9s
14			24s
15			24s
16			2:38s
17			1:07s
18			20s
19			2:49s

Limitations of findings

The methods used to collect the data contained too many variables for conclusive analysis, thereby limiting the findings presented in this report. First, the camera angles when recording students using existing furniture and then using Bodyfurn furniture were different. The recordings of students using existingfurniture tended to only show six students, whereas the recording of students using Bodyfurn furniture, tended to show twice that number.

Secondly, the types of classroom activities the students were carrying out were different when recordings were made of students using existing furniture, compared to when they were recorded using Bodyfurn furniture. This was reflected in the number of coded instances. For example, one class of students watched a movie when using the Bodyfurn furniture. It would have been useful to have a video of the same class watching a movie while using the existing furniture. Being able to compare the same students carrying out similar classroom activities using both forms of furniture would increase the quality and consistency of the research data.

Thirdly, the positioning of students was another factor that limited findings. Students appeared to be sitting in the same position in the classroom when using the Bodyfurn furniture but this was not the case when they were using the existing furniture. As mentioned above, observing the same students using the existing furniture as well as the Bodyfurn furniture would have provided a greater level of consistency.

Finally, the types of videos also limited findings. For example, it was difficult to make clear comparisons for the Year 9 class when there were two videos of the students using the existing furniture recorded compared to only one recording of the same class when the students were using the Bodyfurn furniture. The Year 11 and 12 classes experienced similar problems.

In summary, the factors outlined in this section made it difficult to effectively analyse the video data collected. Although the conditions of a video recorded classroom observation cannot be replicated, reducing the amount of variants enables some consistency in the results.

Summary

The focus of this exploratory study was to identify possible changes in the students' learning behaviour when using a new suite of classroom furniture compared with using existing classroom furniture. A video analysis software programme called Studiocode was used to code and analyse eleven video recorded classroom observations of Year 9, Year 11 and Year 12 classrooms. Findings from the data seem to indicate a change in the number of times students leaned, moved or turned on their chair.

Overall, students sat more comfortably in the Bodyfurn chairs as indicated by the reduced instances of movement captured on the video recordings. The number of instances of students fidgeting or being distracted also reduced with the exception of Year 12's third video).

However, only tentative conclusions can be reached when comparing the use of existing furniture and Bodyfurn furniture, by students, at this stage. The number of inconsistencies in the video data collection restricts the validity of the findings. If the variables outlined were appropriately addressed, then more valid conclusions could be reached regarding the impact of Bodyfurn furniture on the comfort levels of the students in a classroom environment.

Ways for move forward

If a more robust research is to be undertaken in this area then we suggest that we meet with Furnware to discuss their needs and ways in which we might be better to provide an evidence based approach.

References

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