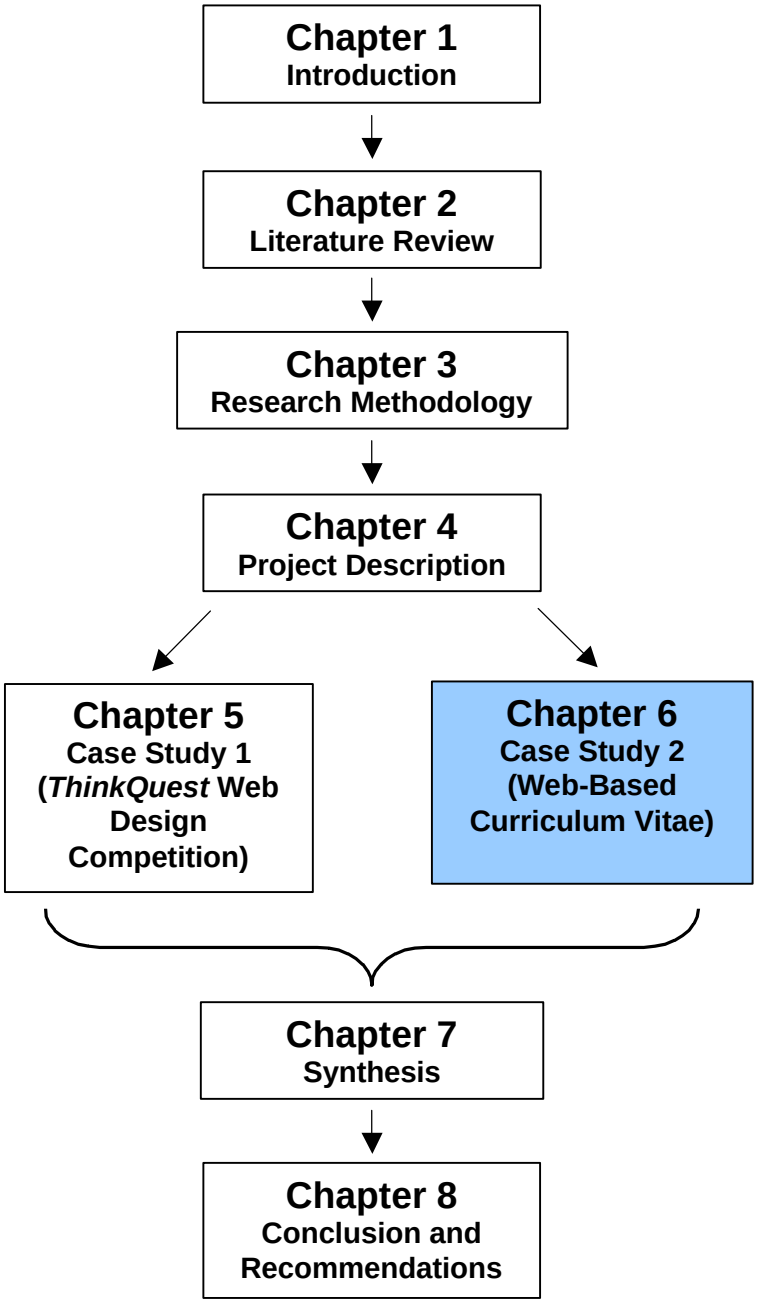
Chapter 6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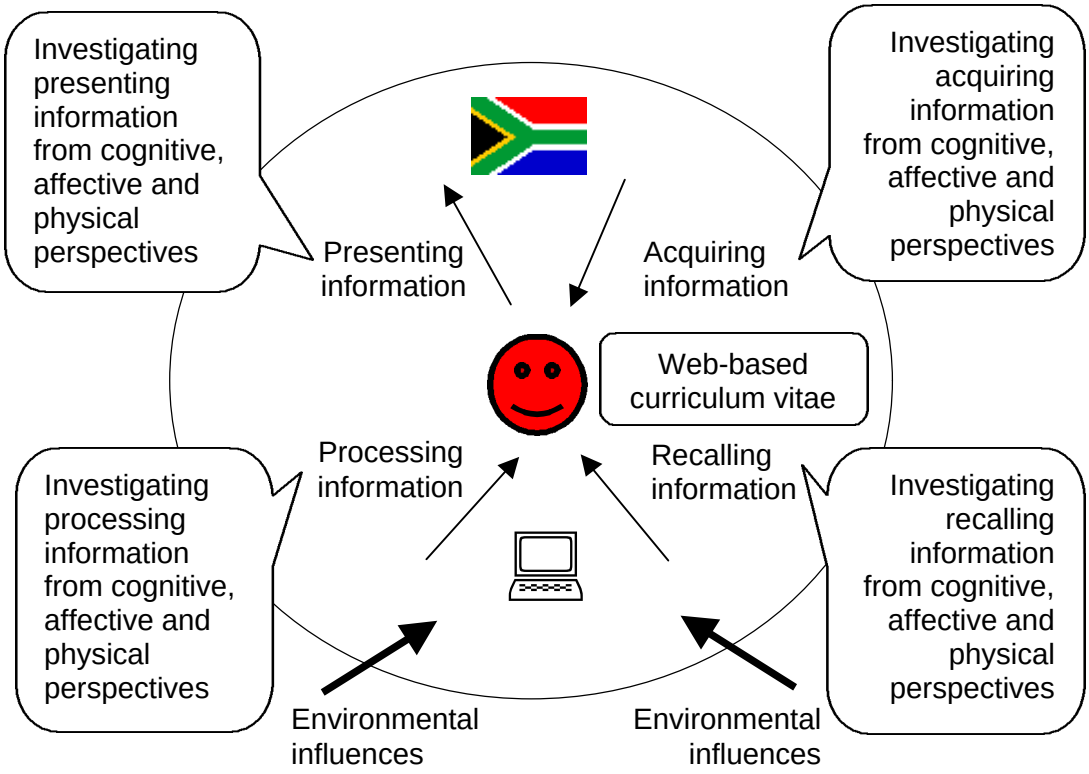
Chapter 6 Case Study 2 - Web-Based Curriculum Vitae

1 Introduction

This case study describes how learners interacted with each other and information in a *contact* digital environment, when they created a curriculum vitae (CV) in a web-based format. The web-based CV was created in a *contact* situation at school in class lesson time. In this case study the focus will be to determine how learners interacted with information with respect to cognitive, affective or physical perspectives as they acquired, recalled, processed and planned, and presented information, as illustrated in Figure 6 - 1. The profile for the analysis of the CV and the process of creating it comes from the profile developed and tabulated at the conclusion of Chapter 2. Figure 6 - 1 illustrates the investigation in this chapter as the PHS learners in a digital environment create their web-based CVs influenced by external forces.

Figure 6 - 1 Interaction with information as the learners create their web-based CVs



This chapter

- examines the participants of the case study, the data collection methods and the process of creating the web-based CV;
- analyses the completed CVs;
- describes the measures taken to ensure validity and reliability; and
- concludes with a summary of the whole case study.

2 Participants

This section provides statistical data on the two Grade 11 classes, 11A and 11D, who made web-based CVs. The following are discussed:

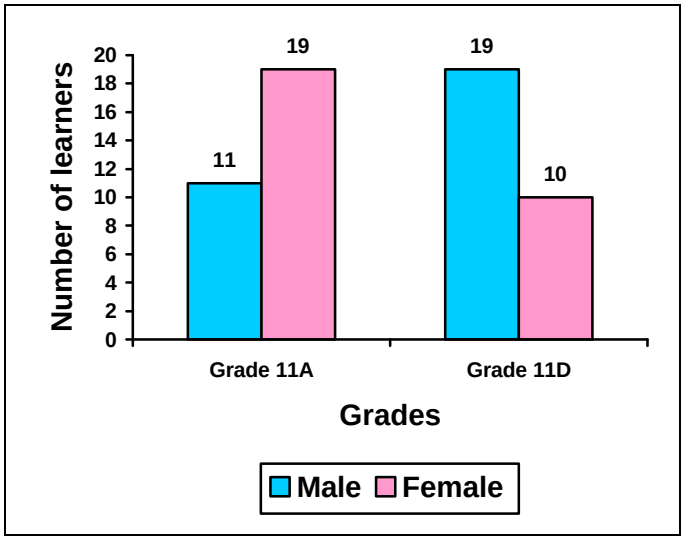
- Numbers of learners who competed the web-based CV
- Distribution of learners by race and gender
- Learners who submitted their web-based CV
- Ownership and use of digital equipment
- Seating positions of the learners in the computer laboratory

The CV was part of the final Matriculation Computer Studies SG project.

- The numbers mentioned in this case study do not reflect those who left the class to do Higher Grade (HG). A number of learners took both Computer Studies Standard Grade (SG) and Computer Studies HG up to Grade 11. For Grade 12 they had to select one or the other grade level for the Matriculation examination. Those learners who elected to do HG in Grade 12 did not do the web-based CV and vacated the class while the web-based CV was being created.
- One learner who was ill for most of the year was not included in the numbers for the grade.

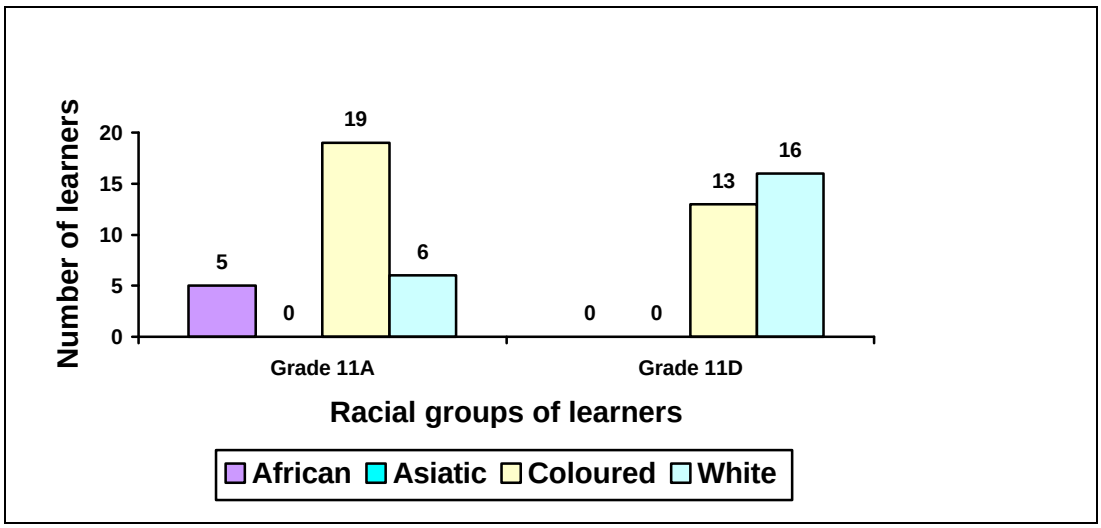
There were two classes of learners in Grade 11 who took the subject Computer Studies SG. The distribution of genders is illustrated in Figure 6 - 2 showing differences in the two classes. The A class has a majority of females whereas the D class has a majority of males.

Figure 6 - 2 Gender distribution by class



The racial distribution of the two classes whose learners made web-based CVs are illustrated in Figure 6 - 3. There are more Coloured learners in the A class and more White learners in the D class, than other racial groups.

Figure 6 - 3 Racial distribution by class



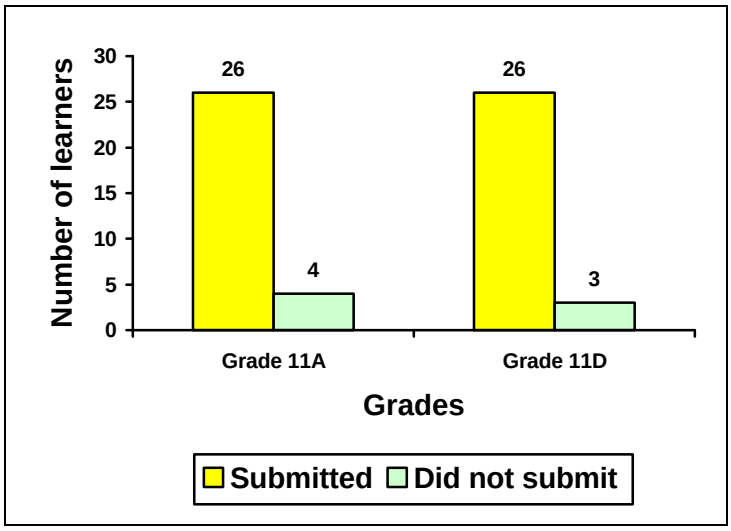
The genders and racial distributions are tabulated in detail in Table 6 - 1. Of the two grades the largest racial group is Coloured, whilst the genders are almost equal.

Table 6 - 1 Gender and racial distributions of learners

			African	Asiatic	Coloured	White
Grade 11A	Male	11	4	0	4	3
	Female	19	1	0	15	3
	Total	30	5	0	19	6
Grade 11D	Male	19	0	0	10	9
	Female	10	0	0	3	7
	Total	29	0	0	13	16
Total		59	5	0	32	22

The numbers of learners who successfully completed and submitted the CV are illustrated in Figure 6 - 4. There is not an appreciable difference between the two classes with respect to the proportion of learners who did not submit their CVs.

Figure 6 - 4 Learners who submitted their CVs



The genders of the learners who successfully submitted their CVs are illustrated in Figure 6 - 5. A higher proportion of males than females did not submit their CVs.

Figure 6 - 5 Genders of learners who submitted their CVs

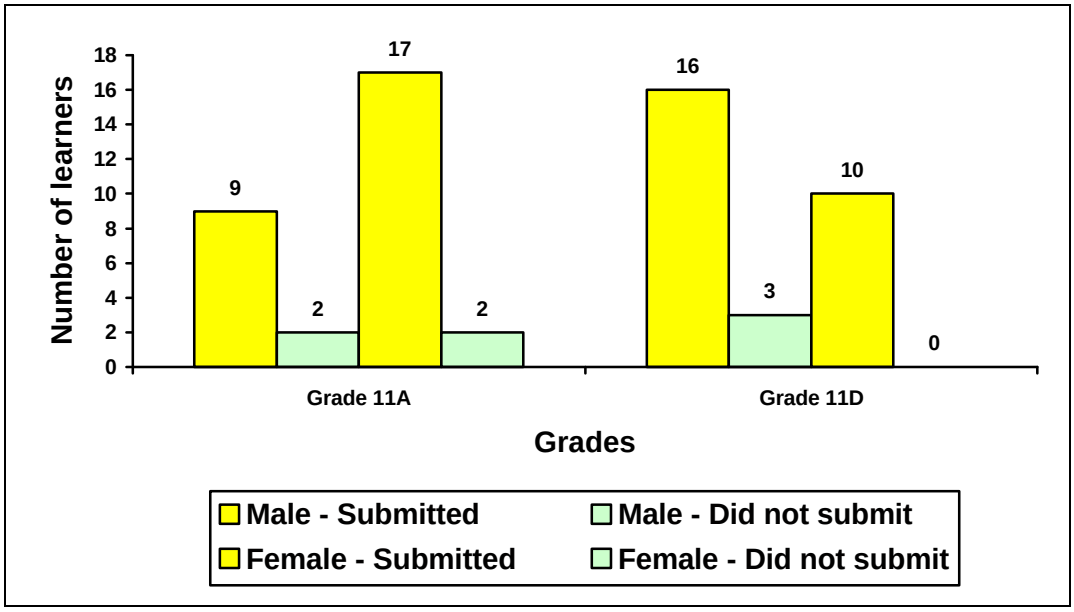


Table 6 - 2 and Table 6 - 3 illustrate how digitally experienced the learners are. They completed the *I own* and *I can* survey discussed in Chapter 4, indicating how many digital pieces of equipment they owned, and how many activities they were able to perform. The data below does not reflect the digital abilities of all the learners who created CVs but sufficient data is provided to indicate that these learners are at home with popular digital activities. There is a significant difference between the two classes, as well has huge differences within the classes. The Grade 11A learners own fewer pieces of digital equipment and are less able to use such equipment.

Table 6 - 2 Digital pieces of equipment owned by learners, out of a maximum of 24

Grade	Average	Maximum	Minimum	Total learners surveyed
11A	13 or 54%	19	7	19
11D	15 or 62%	21	10	18
Average	14 or 58%	20	8	37

Table 6 - 3 Digital activities able to be performed, out of a maximum of 16

Grade	Average	Maximum	Minimum	Total learners surveyed
11A	7 or 43%	11	3	19
11D	12 or 75%	16	9	18
Average	8 or 50%	13	6	37

2.1 Seating positions of learners in the computer laboratory

The learners were allowed to sit where they wished in the computer laboratory. They often walked around to visit and see their friends' work. Regular absence from class probably influenced relationships with peers. In the illustrations of the seating arrangements the blue refers to male learners and pink to female learners. Those learners who did not complete their CV have the words 'No work' in their seating place.

The Grade 11A and Grade 11D seating positions for the course of the web-based CV are illustrated in Figure 6 - 6 and Figure 6 - 7. Before any particular influence is pointed out, it is useful to note

- the empty seats, particularly in Grade 11A;
- the positions of the academically strong learners who took Higher Grade and 'Left' and their possible influence, particularly in Grade 11D;
- the seating positions of learners of different genders; and
- the proximity of the learners who did not hand in work, to other learners.

2.1.1 Seating positions of Grade 11A

The usual seating positions of Grade 11A are illustrated in Figure 6 - 6. In Grade 11A the rate of absence was high. Owing to the fact that there were a number of unused workstations, during the course of the year the learners moved around a bit. The following learners were often not present and their seats vacant:

- Caryn was absent from class or late for class at least three times a week.
- Avril was often absent on sporting engagements.
- Buntu was often absent for reasons unknown.

Figure 6 - 6 Seating positions of Grade 11A learners

Khim	Basri	Kerri	Gwen		Avril	~~No work Lisa~~	~~No work Megal~~	Mandy	*Back row*
Nina	Caryn	Judy	Silma			Moosa	Linda	~~No work Wafiq~~	*4th row*
	Liana	Kay	Tracy	Aisle	~~No work Chad~~	Tanya	Carlo	Lyle	*3rd row*
	Skake	Buntu	Vuyo		Emma	Candy	Zodwa	Siv	*2nd row*
Max									*First row*

As seen in Figure 6 - 6

- there were relatively few males in the Grade 11A class;
- only one group of males sat together, i.e. Skake, Buntu and Vuyo; and
- the seating positions of those who did not hand in work providing no discernable pattern of influence with respect to handing in of work.

2.1.2 Seating positions of Grade 11D

The usual positions of Grade 11D for the course of the web-based CV are illustrated in Figure 6 - 7. Those learners who did not complete their CV have the words 'No work' in their seating place. There were not many open seats. The learners whose seats were unoccupied for any length of time are indicated below:

- Peter was absent so often that his work and position is not taken into account for this case study.
- Imran was often absent on sporting engagements.
- The seats occupied by learners who left to do Higher Grade are indicated with 'Left'.

Figure 6 - 7 Seating positions of Grade 11D learners

~~No work Gino~~	Rob	Vinay	Kelly		Jason	~~Left~~	Brent	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig		Yusuf	~~No work Kader~~	Ricco	Imran	*4th row*
Safia	Robyn	Tessa	~~No work Alex~~	Aisle	Susan	Lara	Kate	Penny	*3rd row*
Sarah	~~Peter Ill~~	Marc			Paul	Ross	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

As seen in Figure 6 - 7

- before the Higher Grade learners left, they sat within the class;
- learners of the same gender seemed to sit near others of the same gender; and
- the seating positions of those who did not hand in work provided no discernable pattern of influence with respect to handing in of work.

2.1.3 Seating position and academic performance

Figure 6 - 8 illustrates the seating positions of the Grade 11A learners and their academic results in Computer Studies SG in their Matriculation examinations at the end of 2002. Note the following:

- The learners were free to sit next to whom they liked.
- Those who 'Repeated' did not pass Grade 11 at the end of 2001, the year in which the case study was done, and hence did not write the Matriculation examination at the end of 2002.

There were no marks for Khim in Grade 11A as she 'Did not write' as she was ill on the examination day.

Figure 6 - 8 Seating positions and academic performance of Grade 11A learners

Khim Did not write	Basri 49	Kerri 34	Gwen 50		Avril 42	~~No work~~ ~~Lisa~~ 54	~~No work~~ ~~Megal~~ ~~44~~	Mandy 41	*Back row*
Nina 58	Caryn 48	Judy 54	Silma 43			Moosa ~~Repeated~~	Linda 51	~~No work~~ ~~Wafiq~~ 49	*4th row*
	Liana 52	Kay 61	Tracy 50	Aisle	~~No work~~ ~~Chad~~ Repeated	Tanya 55	Carlo 50	Lyle 65	*3rd row*
	Skake 44	Buntu 42	Vuyo 57		Emma 59	Candy 49	Zodwa 39	Siv 55	*2nd row*
Max 45									*First row*

From Figure 6 - 8 (Grade 11A) and Figure 6 - 9 (Grade 11D) it can be observed that learners seated next to each other obtained similar marks.

Figure 6 - 9 Seating positions and academic performance of Grade 11D learners

~~No work~~ ~~Gino~~ 64	Rob 69	Vinay 80	Kelly 75		Jason 92	~~Left~~	Brent 66	Dale 57	*Back row*
~~Left~~	~~Left~~	Jared 81	Craig 80		Yusuf 77	~~No work~~ ~~Kader~~ 68	Ricco Repeated	Imran 47	*4th row*
Safia 80	Robyn 80	Tessa 76	~~No work~~ ~~Alex~~ Repeated	Aisle	Susan 77	Lara 69	Kate 77	Penny 81	*3rd row*
Sarah 69	~~Peter~~ ~~Sick~~	Marc 58			Paul 70	Ross 73	Brent 66	Kurt 90	*2nd row*
Jenna 60	Simon 80								*First row*

3 Data collection methods

In order to ensure reliability, consistency and dependability of the results, multiple methods of data collection were used for analysis. The methods used to collect data for the case study are tabulated in Table 6 - 4. The instruments of observation, an event log, digital document analysis and interviews were used to collect data.

Table 6 - 4 Data collection methods

Instrument	Activity
Observation	• The learners were observed over the period of two weeks allocated for the work, while I walked around the computer laboratory and noted the process in an event log. • The seating positions of the learners in the class, with respect to features in their CVs, were noted. • *NetOps School* was used to monitor the learners from my desk when I was not walking around the room and observations were noted in an event log.
Event log	The following were noted in the event log: • When the work was started. • How the learners worked in class. • What work the learners did in class. • Where the learners worked. • With whom the learners worked.
Digital document analysis	The web-based CVs were collated and put onto a CD and the network for closer examination and analysis by learners and myself. The CVs or digital documents were systematically examined using the Windows Find function and the eye, by the learners and myself, and detailed in a spreadsheet, Appendix L. The following were counted: • Every animated gif made with*CoffeeCup Firestarter* or *Flash*, animated gif made with *Gif Animator* or similar, drop down box, feedback form, guest book, jigsaw puzzle, quiz, rollover, thumbnail, tile puzzle and crossword; • Every animated clipart gif, static pictures, sound clip, video clip and graphic background; • Shared borders, frames and image maps were noted; and • Spelling mistakes, levels of information, structure, amount of information and technical quality were noted.
Interviews	• Interviews were held with certain learners to elaborate on incidents and interpretations in the printed case study. • The interviews took place in the computer laboratory at the learners' workstations usually in full view of their neighbouring peers who often added to the discussion.

The data about how the learners created the web-based CV was collected by observation and interviews, and the product was analysed in order to gain additional data. The CVs were made in November 2001. To add hindsight and depth to the findings the learners re-examined their CVs in July 2002 and confirmed the data in the case study. The aim of this re-examination was to add additional data to the case study and add reliability to the findings.

4 Process of creating the web-based curriculum vitae

This case study considers how the learners interacted with information when they created a curriculum vitae (CV) in a web-based format with respect to cognitive, affective or physical perspectives. The following section will discuss the process of creating the web-based CV by introducing it to the learners, watching their progress and their submission of the work. The section will also look at how the learners were motivated, the software used, the place where they did their work, their use of features and their interpretation of the instructions.

4.1 Background

Both classes of Grade 11 learners were given two weeks in which to complete the task of creating their CV as a web site. Earlier the previous term they had completed many web-based tasks and an examination; hence they were well versed in web-based skills. This web-based CV was given to the learners soon after the web-based tasks and examination, as web-based skills were still fresh in their memories. Earlier in the year, for their annual projects, Grade 11A had created a desk top published booklet and not done a web-based project, whereas Grade 11D had taken part in the *ThinkQuest* web design competition. At the conclusion of their respective projects both classes were given a questionnaire, see Chapter 4, to complete which I analysed. The questionnaire was given to the learners with the express purpose of finding better ways of setting and managing projects with respect to the following:

- motivation;
- time management;
- interacting with peers, parents, adults and technology; and
- information.

Based on their responses, it was decided to start the web part of their important Matriculation project while those skills were still fresh.

Conditions when setting the project were as follows:

- Learners had previously made paper-based CVs in English and knew the content of a CV.
- My web-based CV was available on the network and the World Wide Web as an example of a CV to emulate and improve upon.

- Examples of important web features to include were given as hyperlinks from the digital instruction sheet.
- Time was set aside in class to work on the CVs.
- Learners were given two weeks in which to complete the web-based CVs.
- The web-based CV was an important part of the learners' final Matriculation project.
- Important web features that would ensure high marks were listed and given with the instructions to the learners.

The Matriculation Computer Studies SG project is meant to be a package showing the integration of applications in the *MS Office* suite as well as other impressive uses of computer applications. A business is deemed the best method of meeting the requirements of the project by showing off the features of the *Office* suite. It is a large project so I planned to break it down into smaller manageable components. As the learners had not yet decided on the topic of their business I decided to start them off by creating a web site of a CV. A CV was selected as it could be a stand-alone component, not integrated with other packages and not dependent on the theme of their business. The description of the process of creating the site is divided into the following parts: Start, In progress and Submission.

4.2 Start

On the first Monday of the last fortnight of the year, before lessons ended in preparation for the final Grade 11 end-of-year examinations, when the learners came into the room, they were presented with the instructions to create a web-based CV. They were told it had to be completed within two weeks and there would be no extension of time. There were cries of 'Impossible!', 'Too short a time!', 'Unfair!', etc. They were told it was to be for their final Matriculation project.

After they had settled down, it was calmly explained to them that as they had created their desk top published Red Cross Hospital Primary School activity books (Grade 11A) and *ThinkQuest* web sites (Grade 11D) with very short lead times, they could create a web-based CV in the same kind of time. I explained that they had been given 9-12 months for the projects just mentioned, but according to the questionnaire they had just completed, they had, on average, all spent less than two weeks on the projects, hence two weeks for a web-based CV would be enough.

They were told time would be set aside during class in which to do the work. Calm reigned.

The learners were given printed instructions of the requirements, see Appendix H. They were told what features would give them the highest grading. Where possible they were given examples of those features, with hyperlinks to web sites made by Grade 11 learners, on the network at school. The learners knew the people who had created the web sites with the examples, as they were Grade 11 learners in their grade and probably also in their class.

To assist the learners they were given my web-based CV as an example. Both classes looked at it carefully. Some learners were very disparaging of it and the 'Boring' information. To other learners my web-based CV gave them an idea of what should be done. They laughed at the fact that I had personal details such as pictures of my dogs in my CV, but I indicated to them that that information was found under personal interests, and a CV should show the 'whole' person. I was not upset that learners found my CV 'Boring', 'Stupid', 'Silly', etc., as I wanted them to use it, to make their CVs better than mine. On reflection I realised that my web-based CV was important as most learners copied its structural features.

It seemed to take the learners some time to mentally conceptualise what they could put into their CVs. They started to create a web. They added pages on topics such as personal details, education, references, sport, hobbies and interests, family, future goals, achievements, work experience, etc. Many of the learners had previously completed paper-based CVs during English classes that they had saved on their computers and they tried to use a Windows Copy / Paste function from *Word* to *FrontPage*. The formatting was most strange but it did give them a start, and structure. They then copied and pasted information to the appropriate pages within their web. The learners asked about certificates and pictures and how they could put them on their CVs. I suggested scanning them at school on the scanner in our computer laboratory.

4.3 In progress

As the first week progressed the learners started working on their CVs. On a daily basis as they came into the computer laboratory, they sat down and promptly started working. There was less waiting on me, the teacher, to start the lesson but

they logged in and began, as they had to complete their work on schedule. To help keep the learners focussed, I regularly walked slowly around the room, past every workstation, looking and not really commenting which seemed to help focus or refocus the learners. As the CV was about themselves there was little chatter, they thought about the content, mentally planned the sentence construction, and began writing. Periodically learners went to my desk to use the scanner. They scanned and saved the work in their own folders on the network. By the second week, the learners had seen that their peers were inserting real scanned pictures, and then the rush began to use the scanner on my desk. Many learners did not manage to get access to the scanner during class time so they came after school to use the single machine. Some of the learners made their large scanned pictures into thumbnails.

Walking around the workstations, it seemed as if the learners were greatly inhibited by a lack of keyboarding skills. They seemed to spend a large amount of time checking the spelling or keyboarding errors as they typed. I tried to encourage them to key in the information and then format the material but, although they had been told that many times during the previous two years, they still checked the work as they wrote. In addition to checking the spelling of the work as they typed, they also tried to format the work. I would have preferred them to format the content after they had put in all the information.

The learners started working on interactivity after they had put in a fair amount of text. All the learners in Grade 11D had been given the program *CoffeeCup Firestarter* on the *ThinkQuest* CD-ROM but only Sarah and Yusuf had used it in their *ThinkQuest* web site entries. During the time set aside for the web-based CV, as an afterthought, I had it installed on the network in the computer laboratory. I asked Sarah and Yusuf to demonstrate it to some learners, which they did. Animations with *CoffeeCup Firestarter* then spread throughout the class.

The following section is a discussion of motivation, use of software and place of work, using similar features and interpretation of instructions as part of the work in progress.

4.3.1 Motivation

The majority of the learners in both classes worked very hard on the web-based CV, not wasting time in class. Their body language and expressions indicated pleasure, pride and purpose whilst doing the work.

There is a noticeable difference between the two classes, the Grade 11A class being academically weak whereas the Grade 11D are academically strong. While the learners were working there was a feeling of calm. It seemed as if they, particularly Grade 11A, accepted that they could not use all the features listed in the instruction sheet. I had the feelings that topics they tackled were attainable. If their friends had a particular feature, they would add it, but would not become unduly stressed if they did not manage to create it. Most of the learners were motivated to do well at their own level of ability.

4.3.2 Use of software and place of work

The web-based CV was made in *FrontPage* at school, and in *Dreamweaver* by those who worked at home. A number of learners used *FrontPage* at school and home and took files to and from each place of work. Sarah, Jared, Ross and Kurt were irritated by the limitations of *FrontPage* and had no wish to use the program. They did their work at home using *Dreamweaver*, a program they considered better. In class the learners who did not use the software available at school did the following:

- Sarah sat in her own world, using email and writing in her diary.
- Jared chatted to Craig instead of working on the web-based CV.
- Ross sat at his workstation for most of the two weeks showing off and playing with animations and drawings he had made at home using *3D Studio Max*. I was not able to monitor his CV, as he did not bring his to school until the day it was due.
- Kurt, seated near Ross for every lesson, also did not work on his CV in class. Instead he also showed off his animations and drawings made at home with *3D Studio Max*, *Flash 4*, *Adobe Photoshop 6* and *Adobe After-Effects 4*.

4.3.3 Using similar features

The work of the class seemed to move in waves, as one learner thought of something, others copied and the idea radiated outwards like water in a pond. This

was particularly noticeable in interactive and visual features that could be seen on the screen with maximum visibility.

One of the options to achieve high marks was the use of frames. Frames had never been taught in class and I was not able to give any advice, therefore the learners had to teach each other. The learners struggled to use them and I observed Susan, Lara, Kate and Penny assisting each other, working out how to create frames.

Although I was not meant to teach or help learners with their Matriculation project, I did show both classes how to use an image map of a person, to link to pages in the CV, which they followed with interest and understanding.

4.3.4 Interpretation of instructions

During the creation of the CV, learners did not ask me questions about the requirements on the instruction sheet, Appendix H. They did not seem to refer to it at all. No learner was noticed looking at the hyperlinks to web sites to see features such as the crossword, *Flash* or *CoffeeCup Firestarter* introduction.

Six months after creating the CV, when the learners were asked to examine the CV in preparation for the evaluation of the Matriculation project, it became apparent that many did not know what was meant by a number of the features such as 'thumbnail' or 'mouse over'. Why the learners had not asked what was meant in the instruction sheet by a particular feature I do not know. In hindsight it would appear that they thought they had heard or read the instruction, only to discover they had not heard or read it correctly and consequently not added the feature to their CV.

4.4 Submission

The learners hurried to complete their work on time. Having been in my class for almost two years, most of the learners had learned that I keep a date and seldom, if ever, accept late work. The CVs created by each learner were handed in on CD-ROM, on 3 ½ disks or just transferred via the network to my hard drive.

5 Analysis of the process and product of the web-based curriculum vitae

This chapter aims to describe how learners interacted with information in a *contact* digital environment from cognitive, affective and physical perspectives.

5.1 Cognitive perspective

The following section will examine how the learners interacted with information in a *contact* digital environment from a cognitive perspective looking particularly at acquiring, recalling, processing or planning, and presenting information while creating the web-based CV.

5.1.1 Acquiring information

The learners had already acquired many of the skills required for creating a web before they were tasked with creating a web-based CV. They acquired additional skills as they created the site mainly under the influence of their peers as they worked on the CV. This is discussed later in *5.2.2, Influence of peers.*

5.1.2 Recalling information

The learners had been taught how to author a web site earlier in the year. The skills required for the authoring of the web-based CV were recalled from previous lessons mainly under the influence of peers, as discussed in *5.2.2, Influence of peers*. The content required for their own CV web site was recalled by the learners from their own experience or their English print-based CV.

5.1.3 Processing, planning, structuring and amount of information

The way in which the learners planned the web site with reference to the conceptual planning, the structure used and the amount of information included are now examined.

5.1.3.1 Processing and planning

The learners created their CV as they worked and as they learned new features to be included. They did not really pre plan their work although they did plan what information to put on each page. Most of the learners managed their time so they were able to hand the work in on time.

5.1.3.2 Model or structure

The following are features of the model or outward organisational structure of the web-based CV:

- The information was arranged on different pages that the learners found easy after I had given them the example of my web-based CV. They had no difficulty putting the appropriate information on the correct pages. To link to the pages in the web they used hyperlinks from words, hover buttons and image maps.
- Most of the CVs had a clear structure, with the page titles containing information on the topic. However, five learners had sites that were not well structured.
- Information arranged at two levels, a fairly sophisticated feature, was used in about half the web sites. A web site with two levels meant an initial Home page with links to Qualifications, Work experience, Family, etc., and then links from the Qualifications page to the pages of the many different qualifications attained, and so forth.
- Shared borders, something not taught, was used by about five learners.
- A few learners created their own styles.
- Twelve learners in Grade 11D were the only learners who used frames to organise pages and their linking.
- Image maps as a form of pointing the browser in the intended direction in addition to normal hyperlinks, were used by 19 of the 52 learners. This feature was a simpler way of organising the web than frames. This relatively advanced organisational feature was accomplished by seven learners in Grade 11A and twelve in Grade 11D.

5.1.3.3 Amount of information

There was little information per CV. On a scale of 1 (little) - 2 (great deal) most of the learners in Grade 11A had a 1, and Grade 11D learners had a 2. The Grade 11A learners in particular either did not have enough time to plan their lives in CV format, or did not have the ability to mentally process or conceptualise their lives in CV format. The idea of a very short printed CV of one page has become the norm in business and may have influenced the amount of information in the CVs.

It was rather a shock when the case study analysis was given to the class to check and comment on, that two males, Jared and Craig, challenged my perceptions about the lack of information.

- Craig felt that 'creating a lengthy CV full of meaningless useless additions (features) a web-based CV is illogical as users would be more irritated than informed when attempting to browse for relevant information'.
- Jared added that 'users of the CV would wonder why so many unrelated features were implemented and would assume the CV's owner is trying to compensate for a lack of something else. Why would any potential employer want to be pop quizzed on your details? Rather direct browsers to separate work (web work) than pack myriads of finicky features and highlights into a CV.'

Perhaps this was a reason for the lack of textual information presented.

5.1.4 Presenting information

By looking at the surface features of the CVs with reference to spelling, the look of the pages, the tone of the sites and the multimedia features used the following section will discuss how the learners presented information.

5.1.4.1 Spelling

The CVs of the learners contained many spelling errors that the learners had not noticed when they made the CVs and submitted them. Six months later, preparing the CVs for submission for the Matriculation examination, the learners noticed their errors and corrected them. In discussion, it was apparent the learners had not noticed them, because if they had they would have been corrected.

5.1.4.2 Pages

Information was presented in pages in the following ways:

- The CVs were made up of a number of pages, with hyperlinks from the main or index page to other pages.
- Each web was made up of from seven to ten pages.
- Most pages had illustrations in the form of clipart, scanned pictures or thumbnails; or interactive features such as crosswords, tile puzzles or animations; in addition to text.
- On many pages text was found that was not blocked, had too many open lines, had been formatted with too much line spacing or had used more than one

screen. This display necessitated that one had to scroll down a screen that was not full of text or images, to view the information.

5.1.4.3 Tone

The language used was simple. Not all the work had a suitable tone for a CV and some were positively chatty and familiar. One CV was humourous and I am not sure if that was suitable for a CV.

5.1.4.4 Presenting information in multimedia formats

The following section will examine how the learners presented information in various multimedia formats including graphic, static and interactive features developed by the learners.

5.1.4.4.1 Graphic features

The learners were encouraged to insert graphics as I had done on my web site. Many of them inserted clipart pictures which had little bearing on a personal CV: they were generic pictures and not related to their lives, whereas those who added scanned pictures chose pictures which had relevance to the topic in the web-based CV. As I did not want to give too much guidance, as this was part of their individual Matriculation project, I did not correct them.

Silma had the most clipart pictures, 89 in total, as opposed to 12 scanned. Brent had the highest number of scanned pictures, about 48, all related to the content in his CV.

Initially I thought the learners were using too many images and not enough text-based content but I held my own counsel. Perhaps the learners had not sorted out their lives into compartments where they could add much text-based content. Perhaps there was not enough time to add text-based content, and graphic images were a shorthand way of providing information. Perhaps they preferred images, as they did not have the linguistic ability to write at length.

5.1.4.4.2 Static features

Static or very easy to insert features found in the CVs were:

- Illustrations used by almost every learner.
- Video clips with limited relevance to the topic added by three learners.
- Sound clips with little relevance to their CVs added by four learners.

- Background colours or images used by most learners.
- Animated clipart images used a great deal by a few learners. These animations were generic images vaguely on the topic of the text near which they were positioned.
- A database integrated into a web unsuccessfully used by one learner.

5.1.4.4.3 Interactive features

In this context interactive features refer to features that react to input and were developed by the learner. Interactive features, therefore, do not include animated clipart images although, technically, they are interactive. In most instances the interactive features complemented the text and content of the CV.

Interactive features were found in almost every CV. They included the following: thumbnails, rollovers, animated gifs made with *CoffeeCup Firestarter* or *Flash,* animated gifs made with *Gif Animator* or similar, crossword puzzles, tile puzzles, quizzes, jigsaw puzzles, drop down boxes, feedback forms and guestbooks.

The use of interactive features by the learners is tabulated in Table 6 - 5. Apart from the thumbnail and mouse over, in general the learners did not use many interactive features in their entries as seen in Table 6 - 5.

Table 6 - 5 Use of interactive features by Grades 11A and 11D

Feature	Total number used[11]	Average number used per learner
Thumbnail	363	6.98
Mouse over	88	1.69
Animated gif made with *CoffeeCup Firestarter* or *Flash*	18	0.35
Animated gif made with *Gif Animator* or similar	41	0.79
Crossword puzzle	7	0.13
Tile puzzle	5	0.10
Quiz	4	0.08
Jigsaw puzzle	1	0.04
Drop down box	9	0.17
Feedback form	10	0.19
Guest book	12	0.23

[11] The numbers may not be totally accurate although they were checked by teams of learners.

A thumbnail, a small version of an image, was the most commonly used interactive feature followed by a mouse over, tabulated in Table 6 - 5 and illustrated in Figure 6 - 10. Thumbnails and mouse overs are based on graphic images.

Figure 6 - 10 Numbers of learners who used the interactive features

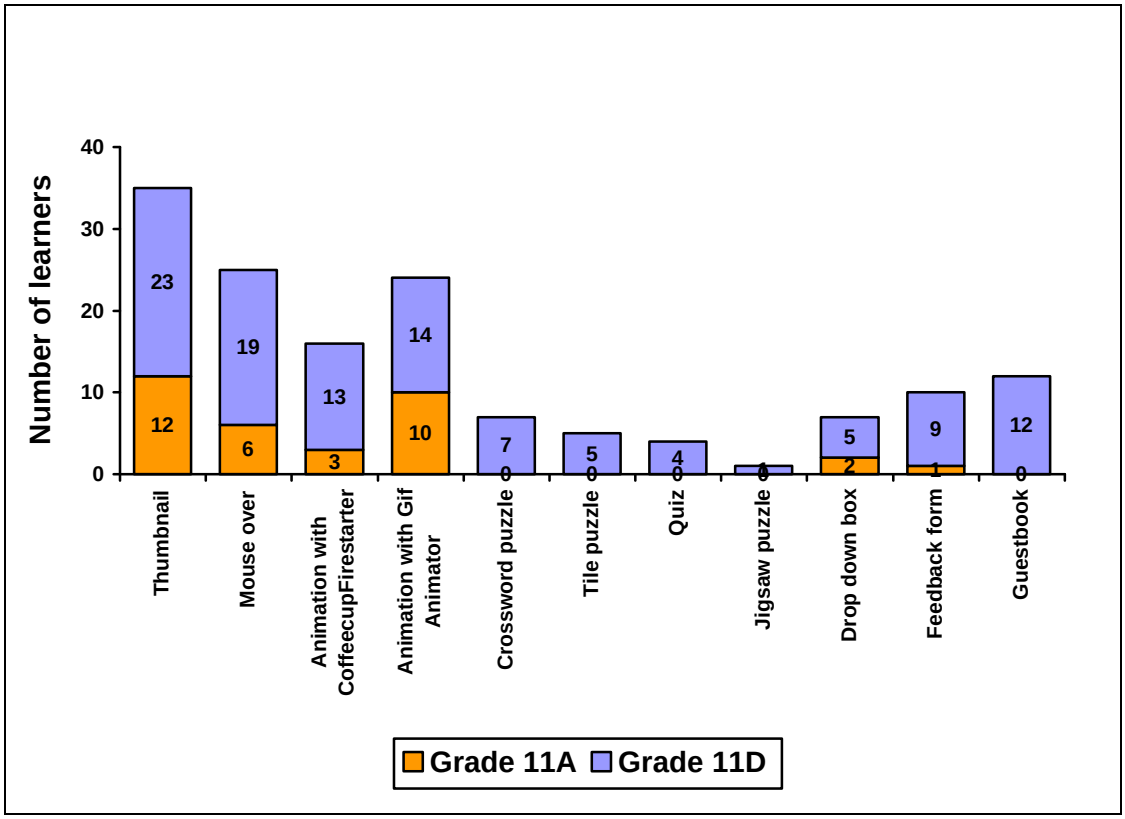
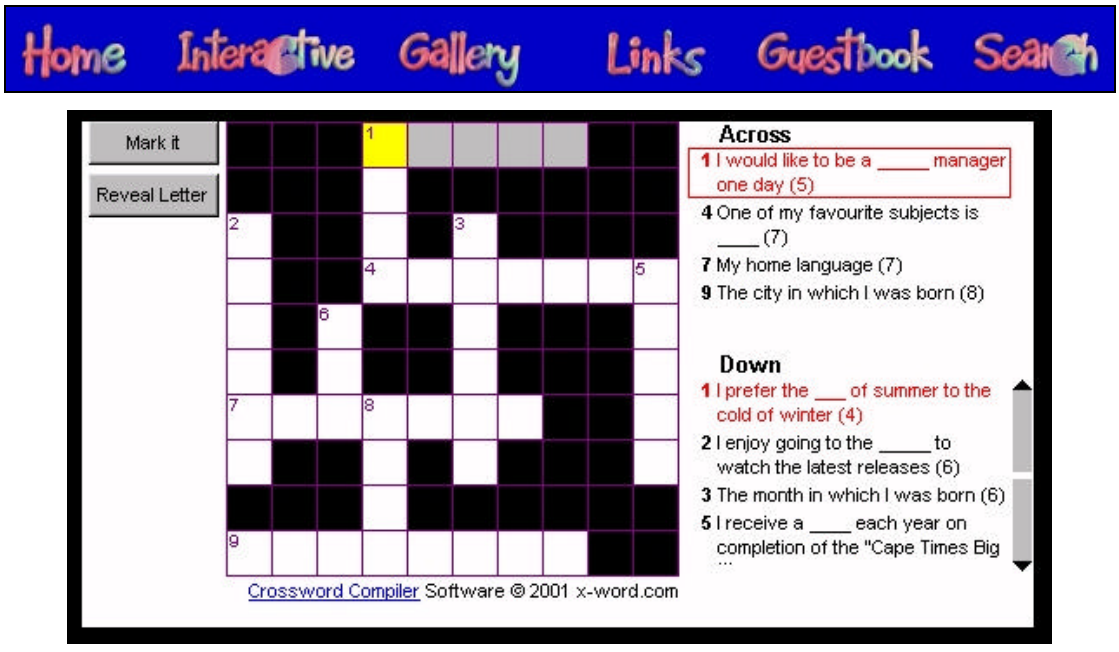


Figure 6 - 11 Images from the CVs



5.1.5 Summary of interaction with information from a cognitive perspective

The manner in which the learners cognitively interacted with information in the *contact* educational digital environment was discussed in the preceding section. The findings are summarised and tabulated in Table 6 - 6 based on how the learners acquired, recalled, processes and planned, and presented information when creating their web-based CV, behaviours and activities discussed in Section *6, Synthesis and profile* in Chapter 2.

Table 6 - 6 How the learners cognitively interacted with information during the process of creating the web-based CV

Cognitive perspective	Cognitive interaction
Acquiring information	• Learners acquired web-authoring skills influenced by their peers.
Recalling information	• Learners recalled web-authoring skills interacting with their peers.
Processing / planning information	• Learners did not plan their CV but created it as they proceeded. • Learners modeled or structured their CV logically. • About half of the learners developed a CV arranged with pages and hyperlinks at two levels using higher-level thinking skills. • Half of Grade 11D learners used frames, whilst no learners in Grade 11A used frames. • Image maps were used by some learners in Grades 11A and D. • Learners had difficulty mentally processing and creating the text-based information required.
Presenting information	• Most learners had spelling errors on their web pages that they had not seen when they created the CV. • The web sites were made up of a number of illustrated and linked pages of text. • Static and animated clipart images added to the web pages seldom complemented the content. • Interactive features complemented the content. • Grade 11D were better able than Grade 11A to create interactive features and communicate the subject matter in multiple formats.

Table 6 - 6 summarises how the learners interacted with information when they created their web-based CV.

- Peers influenced the acquisition and recall of information.
- The structure of the CV was planned as the learners worked on the CV.
- A web with pages linked on two levels, frames and image maps, i.e. features of higher-level thinking skills were used by about half the total number of learners.
- Scanned images and interactive features, i.e. objects made by the learners complemented the text.

Table 6 - 7 tabulates where the cognitive behaviours and activities in the literature review, Table 2 - 26 in Chapter 2, and the way in which the learners created the web-based CVs in the *contact* environment of the classroom, have common ground:

- ✓ indicates where the literature review and the behaviour or activity concur.
- X indicates where the literature and the behaviour or activity do not concur.
- ⇨ indicates where the activity was not found in the literature.
- NA indicates where it was not applicable in this situation.

Table 6 - 7 is grouped by perspective and then by the form of cognitive behaviour or activity, to the literature review. Evidence is then found in the activities or behaviour in the *contact* class environment of the classroom, concurring or not concurring with the literature review.

Table 6 - 7 Comparing cognitive behaviour or activity from the literature with the way in which the learners created their web-based CVs

Cognitive perspective	Cognitive behaviour or activity from the literature review	Common ground	Interaction with information while creating the web-based CV
Acquiring information	• Able to source material in digital environment with sophisticated search strategies	NA	• Learners did not really source digital information anywhere.
	• Absorb material quickly as individual learner accommodated	NA	• The learners already knew web-authoring skills.
	• Critical of content of resource material	NA	• Learners did not use resource material, rather created their own.
	• Prefer acquiring information from graphic images in preference to text	NA	• Learners did not acquire information in graphic or text-based format, but used graphics instead of text to convey information.
	• Know where to find information on a screen	NA	• Learners did not source information on a screen.
	• Not found in the literature review	⇨	• Learners acquired web-authoring skills influenced by their peers.
Recalling information	• Recall of screen-based material difficult	NA	• Learners were not required to recall screen-based material.
	• Short term memory assisted by sensory features of digital environment	NA	• Learners were not required to remember content, apart for the skills for the development of the CV.
	• Recall text on screen in chunks and not with the bigger picture	NA	• Learners were not required to remember text on screen.
	• Literate in non-verbal environment	NA	• Learners were not required to recall information in a verbal or non-verbal environment.
	• Long term memory assisted by organisation of digital environment	NA	• Learners were not required to recall information.
	• Not found in the literature review	⇨	• Learners recalled web-authoring skills through interacting with their peers.

Cognitive perspective	Cognitive behaviour or activity from the literature review	Common ground	Interaction with information while creating the web-based CV
Processing / planning information	• Plan creating digital projects	X	• The learners did not pre plan their CV but created it as they went along.
	• Build mental models of the learning material	NA	• Learners were not requited to learn material.
	• Use higher-level thinking skills	✓	• About half of the learners developed a CV arranged with pages and hyperlinks at two levels using higher-level thinking skills. As they developed interactive features they used higher-level meaningful thinking. The learners modeled or structured their CV using higher-level thinking skills.
	• Visually process a number of programs at once	NA	• Not observed.
Presenting information	• Cognitive processing of screen-based material superficial	✓	• Most learners had spelling errors on their web pages that they had not seen when they created the site.
	• Able to communicate their understanding of the subject matter in multiple formats	⇨ ⇨ ⇨ ⇨	• Grade 11D, or the academically strong class, were better able than Grade 11A, or the academically weak class, to create interactive features and communicate the subject matter in multiple formats. • Static and animated clipart images added to the web pages seldom complemented the content. • Interactive features complemented the content. • The learners had difficulty mentally processing and creating the text-based information required.
	• Develop own symbols and abbreviations for communicating	NA	• Not observed.
	• Transfer of learning to other contexts takes place	NA	• Not observed.
	• Use authentic language in developing digital projects which assists information processing	NA	• Not observed.

The following behaviours or activities were those *present* in Table 2 - 26 where the cognitive profile of a South African FET learner in a digital environment was tabulated, and in the creation of the web-based CV:

- Use higher-level thinking skills
- Cognitive processing of screen-based material superficial

Many cognitive activities or behaviour became apparent. Cognitive behaviours or activities present in the web-based CV but *not found* in the literature review were:

- Learners acquired web-authoring skills influenced by their peers.
- Learners recalled web-authoring skills through interacting with their peers.
- Grade 11D or the academically strong class were better able than Grade 11A or the academically weak class to create interactive features and communicate the subject matter in multiple formats.
- Static and animated clipart images added to the web pages seldom complemented the content.
- Interactive features complemented the content.
- The learners had difficulty mentally processing and creating the text-based information required.

Table 6 - 7 compared the literature review and the behaviours or activities in the classroom when the learners created their CV looking at the activities from a cognitive perspective. There was very little concurrence of the cognitive behaviours or activities of the literature review with the CV created in the *contact* environment of the classroom.

5.2 Affective perspective

The following section will examine how the learners interacted with information in a *contact* digital environment from an affective perspective looking particularly at motivation, the influence of peers, time and mental state.

5.2.1 Motivation

Most of the learners enjoyed creating their web-based CVs. Six months after the creation of the web-based CV, analysing the CVs and looking at them with the classes in preparation for their final Matriculation submission, it was apparent that the learners had enjoyed creating them. Based on the analysis it is apparent that:

- The learners spent time using the features they were able to use but did not worry to include features that would enable them to obtain high marks. Once learners found something they enjoyed making, they focused on that to the exclusion of other features.
- The learners had great fun creating an animation in *PaintShop Pro* with *Gif Animator, Gif Construction Set* and *Image Composer*. The shareware versions of *PaintShop Pro* with *Gif Animator* and *Gif Construction Set* were installed on the network for the duration of the making of the CV. Some of the learners preferred to use *Image Composer* already on the network. This feature only gained an intermediate mark but many learners added this feature. Nevertheless, the idea of adding an animation spread throughout the class because it was seen on learners' screens. Although the learners were engrossed, they spent much time on this single feature. In Grade 11A, Lyle spent more than four periods of the allocated nine or ten, working on a sophisticated animation of a skateboarder 'ollieing (jumping over four stairs and landing)' [Lyle]. Carlo, next to him, made an animation which took a great deal of skill and time, of a face smiling.
- The learners enjoyed creating the CV and did not really worry about the marks to be allocated. Avril added 40 animated clipart graphics and Vuyo added 33 thumbnails, and few other features, instead of looking at the marking schedule and adding features which would contribute to marks.
- Many of the learners added features that, although they were mentioned, were not specified in the printed instructions, such as *JavaScript* quizzes and tile puzzles.

The amount of work done by the Grade 11D learners varied from a little to a great deal but most learners seemed to do enough work to obtain a high mark.

- Jason, a councillor, planned the time and effort needed to obtain a good mark for the CV. He was very involved in school sport and leadership activities so did not have time to explore the packages available that could have been used to enhance the CV. He nevertheless obtained a high mark because of his judicious selection of high-mark features.
- Kelly, a councillor, was also involved in sport and leadership activities but she managed her time well and obtained a high mark by using many advanced features which she learned as she created the web-based CV.
- Jared and Kurt did not produce a CV commensurate with their abilities. Jared did very little work on his CV, just adding the minimum features to obtain a high

mark. His effort was very disappointing as he has more web skills than I have. Craig, who sits next to Jared (see their usual seating positions in Figure 6 - 12), also did the minimum, perhaps taking his cue from Jared.

- Kurt seems to work and think in a different way to the norm. He has so much ability but did not produce work reflecting his true ability, perhaps because he is aware that he knows more than I do about web-authoring, and can deceive me with little work.
- Of the academically strong learners in Grade 11D only Jason and Kelly did not use a *Flash* or *CoffeeCup Firestarter*-type animation. Jason did not add one, I think because it required too much effort to learn the program and Kelly did not have enough time to learn to make one.

5.2.2 Influence of peers

During the creation of the web-based CV much collaboration took place with enthusiastic learners sharing ideas with each other. The following section will look at how the two classes worked with frames; animated clipart images; mouse overs; tile puzzles; thumbnails; crossword puzzles; animations made with *CoffeeCup Firestarter* or *Flash;* animations made with *Gif Animator*, *Gif Construction Set* or *Image Composer;* and quizzes. The seating positions of the learners are indicated with coloured blocks, pink for females and blue for males, if the learner used the feature under discussion.

5.2.2.1 Frames

Some of the learners who used this feature shared the skills with those near them. Note their seating positions close to each other in Figure 6 - 12.

- Grade 11A - No learners used frames.
- Grade 11D - Twelve learners used frames. Susan, Lara, Kate and Penny all used frames and sat near each other. Rob, Vinay and Kelly sat next to each other, and all used frames. In Grade 11D the usual seating positions of the learners who used frames are illustrated in Figure 6 - 12.

Figure 6 - 12 Seating positions of Grade 11D learners with reference to their sharing of ideas and frames

~~No work~~ ~~Gino~~	Rob	Vinay	Kelly		Jason	~~Left~~	Brent	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig		Yusuf	~~No work~~ ~~Kader~~	Ricco	Imran	*4th row*
Safia	Robyn	Tessa	~~No work~~ ~~Alex~~	Aisle	Susan	Lara	Kate	Penny	*3rd row*
Sarah	Marc				Paul	Ross	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

5.2.2.2 Animated clipart images

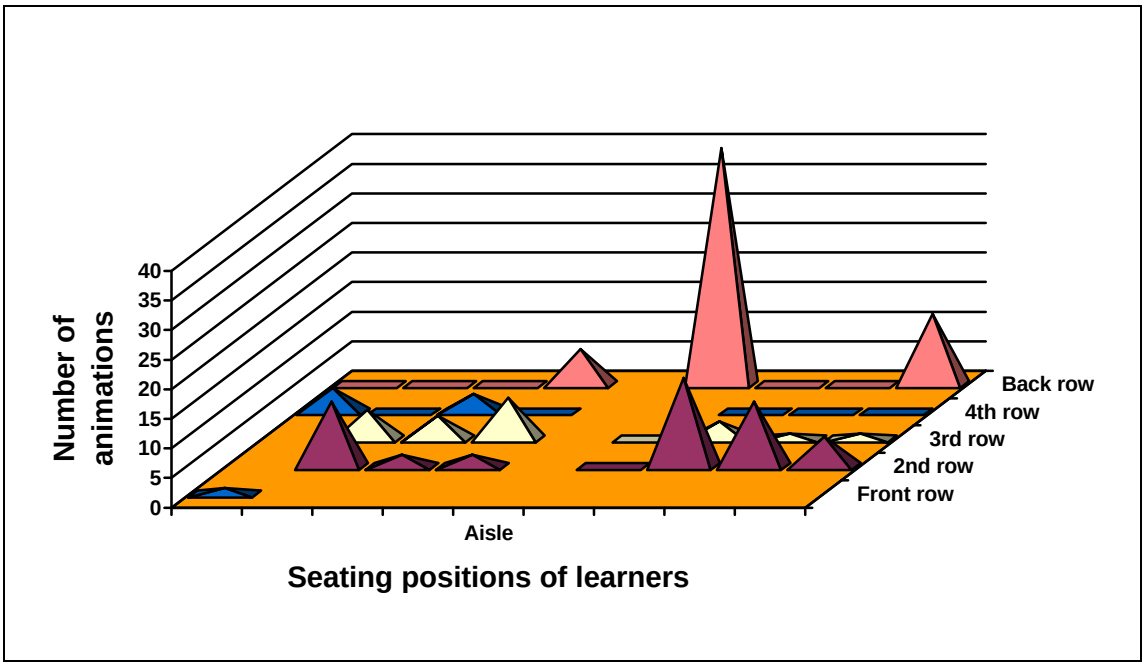
From Figure 6 - 13 it can be seen that learners seated near each other used clipart animations and also used a similar number of animations. It would appear that the learners were influenced by the learners seated next to them with respect to the number of animated images. Most of the learners who used ready-made animated clipart images were in one class, Grade 11A.

- Grade 11A - Avril used the most animated clipart images, 40 in total, followed by Judy, Skake and Zodwa. Figure 6 - 13 illustrates the seating positions of the learners who used clipart animations, giving the number of images used. Figure 6 - 14 shows in 3D format the seating positions of the Grade 11A learners with respect to their position in the computer laboratory, and their use of animated clipart images.
- Grade 11D - Very few learners used clipart animations.

Figure 6 - 13 Seating positions of Grade 11A learners with reference to their sharing of ideas and animated clipart images

Khim	Basri	Kerri	Gwen 6		Avril 40	~~No work~~ Lisa	~~No work~~ Megal	Mandy 12	*Back row*
Nina 4	Caryn	Judy 3	Silma			Moosa	Linda	~~No work~~ Wafiq	*4th row*
	Liana 5	Kay 4	Tracy 7	Aisle	~~No work~~ Chad	Tanya 3	Carlo 1	Lyle 1	*3rd row*
	Skake 11	Buntu 2	Vuyo 2		Emma	Candy 15	Zodwa 11	Siv 5	*2nd row*
Max 1									*First row*

Figure 6 - 14 Seating positions of Grade 11A learners in 3D format with reference to their sharing of ideas and animated clipart images



5.2.2.3 Mouse overs

The use of mouse overs by the learners did not show a sufficient pattern to see trends.

- Grade 11A - The use of mouse overs was almost restricted to two groups of learners: Siv, Buntu, Vuyo and Zodwa; and Kerri and Kay, their seating positions illustrated in Figure 6 - 15. The first group of learners are friends who stayed after school waiting for lifts and worked on their CVs together in the afternoon.

Gwen and Kay both tried very hard to do well and looked around the class continually to see what they could add.

- Grade 11D - So many learners used mouse overs that no pattern of influence was visible.

Figure 6 - 15 Seating positions of Grade 11A learners with reference to their sharing of ideas and mouse overs

Khim	Basri	Kerri	Gwen		Avril	~~No work~~ ~~Lisa~~	~~No work~~ ~~Megal~~	Mandy	*Back row*
Nina	Caryn	Judy	Silma			Moosa	Linda	~~No work~~ ~~Wafiq~~	*4th row*
	Liana	Kay	Tracy	Aisle	~~No work~~ ~~Chad~~	Tanya	Carlo	Lyle	*3rd row*
	Skake	Buntu	Vuyo		Emma	Candy	Zodwa	Siv	*2nd row*
Max									*First row*

5.2.2.4 Tile puzzle

Some of the learners recalled learning about tile puzzles during the year and inserted them in their web-based CVs. All of the learners who added a tile puzzle were very motivated and wanted to achieve high marks for their Matriculation examination. They are all in Grade 11D and are friends.

- Grade 11A - No learner had a tile puzzle.
- Grade 11D - Five learners had tile puzzles. The idea of making the puzzle spread, possibly because Vinay and Kelly are friends and sit next to each other; Kelly and Jason are friends; and Jason sits next to Brent with Grant who left the class in between. (Note their usual seating positions in Figure 6 - 16.) I do not recall how Penny remembered the puzzle, or if she learned it from one of the learners just mentioned, nor who initially remembered the puzzle.

Figure 6 - 16 Seating positions of Grade 11D learners with reference to their sharing of ideas and the tile puzzle

~~No work Gino~~	Rob	Vinay	Kelly		Jason	~~Left~~	Brent	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig		Yusuf	~~No work Kader~~	Ricco	Imran	*4th row*
Safia	Robyn	Tessa	~~No work Alex~~	Aisle	Susan	Lara	Kate	Penny	*3rd row*
Sarah		Marc			Paul	Ross	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

5.2.2.5 Thumbnails

Learners seated near each other seemed to influence each other with respect to the use of thumbnails in Grade 11A. In Grade 11D so many thumbnails were used that no trends could be seen.

- Grade 11A - In this class the learners who used thumbnails all sat near each other in four rows, plus one learner whose row did not use thumbnails, illustrated in Figure 6 - 17 with coloured blocks. Only 12 of the 26 learners who submitted their CVs used thumbnails. The seating positions of the learners in the computer laboratory and the numbers of thumbnails they used are illustrated in 3D format in Figure 6 - 18.
- Grade 11D - The learners who had no thumbnails either did their work at home or at school, so no conclusion about the use thereof can be attributed to the place of work. Of the learners who did not use thumbnails, Sarah who had a wonderful CV, used many full size pictures that were small enough and did not require to be made into thumbnails; but Marc, on the other hand, had only one scanned picture and a very poor CV. The seating positions of these learners are illustrated in Figure 6 - 19 and in 3D format in Figure 6 - 20. In Figure 6 - 20 one is able to clearly see the high points in the graph indicating the number of thumbnails they used and how those who sat on either side influenced the learners.

Figure 6 - 17 Seating positions of Grade 11A learners with reference to their sharing of ideas and thumbnails

Khim	Basri	Kerri 1	Gwen 5	Aisle	Avril	~~No work~~ ~~Lisa~~	~~No work~~ ~~Megal~~	Mandy 3	*Back row*
Nina	Caryn	Judy	Silma			Moosa	Linda	~~No work~~ ~~Wafiq~~	*4th row*
	Liana 6	Kay 21	Tracy 21		~~No work~~ ~~Chad~~	Tanya	Carlo	Lyle 5	*3rd row*
	Skake 5	Buntu	Vuyo 33		Emma	Candy 7	Zodwa 2	Siv 9	*2nd row*
Max									*First row*

Figure 6 - 18 Seating positions of Grade 11A learners in 3D format with reference to their sharing of ideas and thumbnails

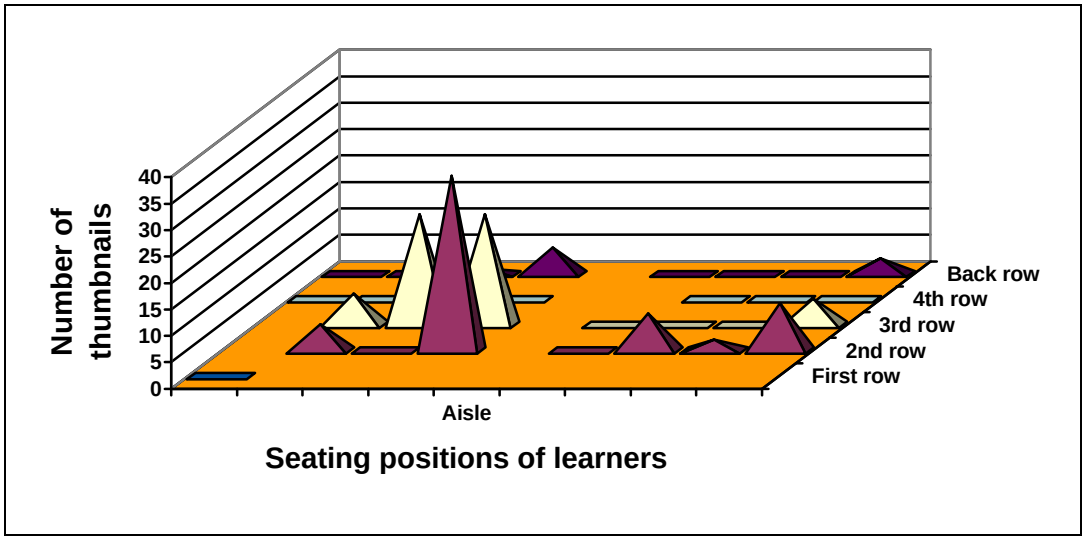
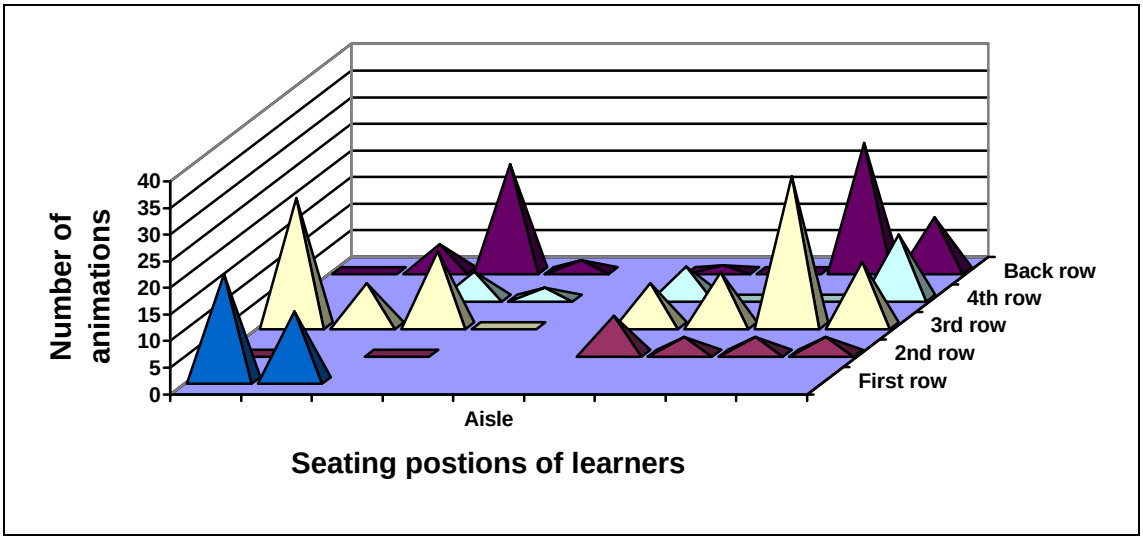


Figure 6 - 19 Seating positions of Grade 11D learners with reference to their sharing of ideas and thumbnails

~~No work~~ ~~Gino~~	Rob 5	Vinay 20	Kelly 2		Jason 1	~~Left~~	Brent 24	Dale 10	*Back row*
~~Left~~	~~Left~~	Jared 5	Craig 2		Yusuf 6	~~No work~~ ~~Kader~~	Ricco 0	Imran 12	*4th row*
Safia 24	Robyn 8	Tessa 14	~~No work~~ ~~Alex~~	Aisle	Susan 8	Lara 10	Kate 28	Penny 12	*3rd row*
Sarah 0	~~Peter~~ ~~Sick~~	Marc 0			Paul 7	Ross 3	Brent 3	Kurt 3	*2nd row*
Jenna 20	Simon 13								*First row*

Figure 6 - 20 Seating positions of Grade 11D learners in 3D format with reference to their sharing of ideas and thumbnails



5.2.2.6 Crossword puzzle

The learners who had interactive crossword puzzles made with *Crossword Compiler* in their CVs were all girls and all in Grade 11D. Although these learners were highly motivated and competitive, they shared their skills with each other.

- Grade 11A - No learners made interactive crossword puzzles.
- Grade 11D - Safia had found the *JavaScript* shareware software on the World Wide Web during the creation of the *ThinkQuest* competition entry and brought it to my attention during the two week web-based CV period. The network administrator installed it on the network and Safia taught her friends who sat

nearby (see their usual seating positions in Figure 6 - 21). The girls across the aisle also used the crossword puzzle feature. Note the use of features by learners seated next to each other.

Figure 6 - 21 Seating positions of Grade 11D learners with reference to their sharing of ideas and the crossword puzzle

~~No work~~ Gino	Rob	Vinay.	Kelly		Jason	~~Left~~	Brent	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig		Yusuf	~~No work~~ Kader	Ricco	Imran	*4th row*
Safia	Robyn	Tessa	~~No work~~ Alex	Aisle	Susan	Lara	Kate	Penny	*3rd row*
Sarah		Marc			Paul	Ross	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

5.2.2.7 Animations made with *CoffeeCup Firestarter* or *Flash*

The sharing of ideas about this feature is apparent between learners who sat near their peers and those who are friends.

- Grade 11A - The only learners who used *CoffeeCup Firestarter* were three learners who are friends, plus one girl who saw the activity in the row in front of her and went to investigate. Their usual seating positions are shown in Figure 6 - 22.
- Grade 11D - The seating positions of the learners to each other in the classroom with respect to the use of a *Flash* or *CoffeeCup Firestarter*-type animation are illustrated in Figure 6 - 23.

Figure 6 - 22 Seating positions of Grade 11A learners with reference to their sharing of ideas and animations made with *CoffeeCup Firestarter* or *Flash*

Khim	Basri	Kerri	Gwen		Avril	~~No work~~ ~~Lisa~~	~~No work~~ ~~Megal~~	Mandy	*Back row*
Nina	Caryn	Judy	Silma			Moosa	Linda	~~No work~~ ~~Wafiq~~	*4th row*
	Liana	Kay	Tracy	Aisle	~~No work~~ ~~Chad~~	Tanya	Carlo	Lyle	*3rd row*
	Skake	Buntu	Vuyo		Emma	Candy	Zodwa	Siv	*2nd row*
Max									*First row*

Figure 6 - 23 Seating positions of Grade 11D learners with reference to their sharing of ideas and animations made with *CoffeeCup Firestarter* or *Flash*

~~No work~~ ~~Gino~~	Rob	Vinay	Kelly		Jason	~~Left~~	Brent	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig		Yusuf	~~No work~~ ~~Kader~~	Ricco	Imran	*4th row*
Safia	Robyn	Tessa	~~No work~~ ~~Alex~~	Aisle	Susan	Lara	Kate	Penny	*3rd row*
Sarah		Marc			Paul	Ross	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

5.2.2.8 Animations made with *Gif Animator, Gif Construction Set* or *Image Composer*

Peers seated next to each other influenced each other to create animations made with *Gif Animator, Gif Construction Set* or *Image Composer*.

- Grade 11A - Altogether nine learners created their own animations. The seating positions of the learners in the computer laboratory are illustrated in Figure 6 - 24 and in 3D format in Figure 6 - 25. Note in Figure 6 - 25 the use of animation software by the learners in the 3rd row who all created one animation as they obviously stimulated each other.
- Grade 11D - Fourteen learners created their own animations, Sarah, Penny, Kelly, Ross and Safia creating more than one animation, illustrated in

Figure 6 - 26 and in 3D format in Figure 6 - 21. It is interesting to note the amount of animations by Sarah, Safia and Ross. Sarah and Ross did all of their work at home because they were irritated by *FrontPage* and Safia did most of her CV at home because she wanted extended focused time to work on it.

Figure 6 - 24 Seating positions of Grade 11A learners with reference to their sharing of ideas and animations made with *Gif Animator*, *Gif Construction Set* or *Image Composer*

Khim	Basri 1	Kerri	Gwen 1		Avril	~~No work~~ ~~Lisa~~	~~No work~~ ~~Megal~~	Mandy	*Back row*
Nina 1	Caryn 1	Judy	Silma			Moosa 3	Linda	~~No work~~ ~~Wafiq~~	*4th row*
	Liana	Kay	Tracy	Aisle	~~No work~~ ~~Chad~~	Tanya 1	Carlo 1	Lyle 1	*3rd row*
	Skake	Buntu	Vuyo 1		Emma	Candy	Zodwa	Siv	*2nd row*
Max 1									*First row*

Figure 6 - 25 Seating positions of Grade 11A learners in 3D format with reference to their sharing of ideas and animations made with *Gif Animator* or similar

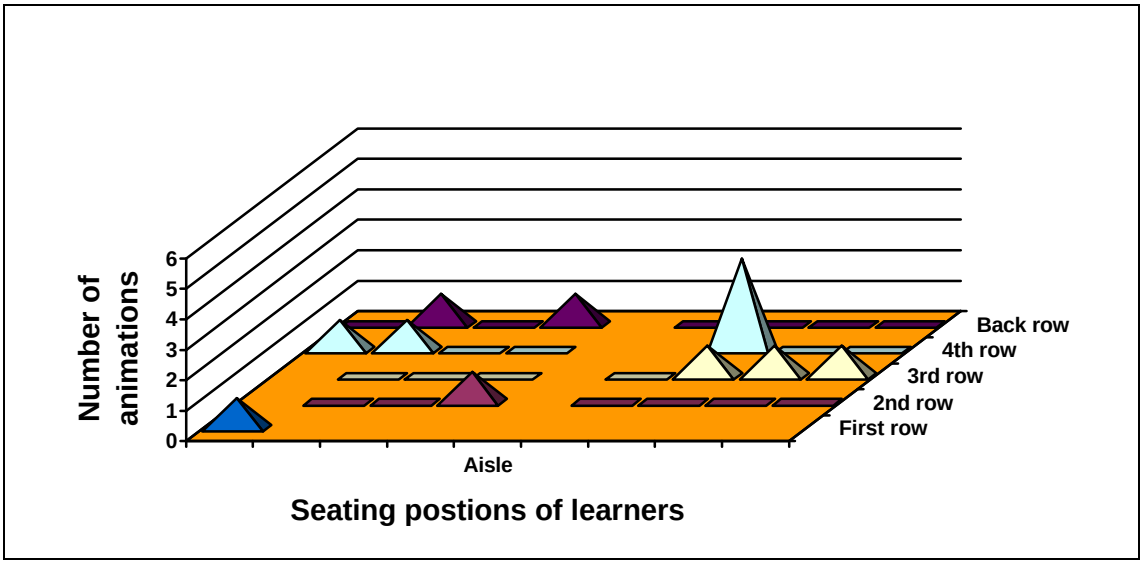
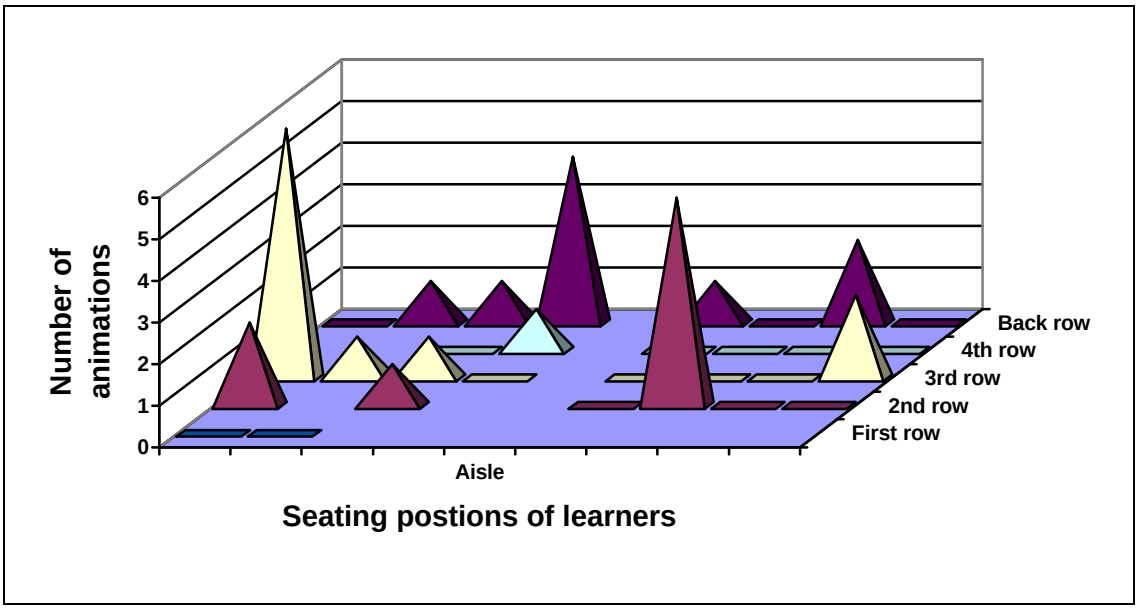


Figure 6 - 26 Seating positions of Grade 11D learners with reference to their sharing of ideas and animations made with *Gif Animator*, *Gif Construction Set* or *Image Composer*

~~No work Gino~~	Rob 1	Vinay 1	Kelly 4		Jason 1	~~Left~~	Brent 2	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig 1		Yusuf	~~No work Kader~~	Ricco	Imran	*4th row*
Safia 6	Robyn 1	Tessa 1	~~No work Alex~~	Aisle	Susan	Lara	Kate	Penny 2	*3rd row*
Sarah 2		Marc 1			Paul	Ross 5	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

Figure 6 - 27 Seating positions of Grade 11D learners in 3D format with reference to their sharing of ideas and animations made with *Gif Animator* or similar



5.2.2.9 Quiz

The creation of the *JavaScript* quiz required much skill and motivation. During the course of the year I taught the learners how to create such as quiz by adapting my *JavaScript* quiz code to their needs. No pattern indicating peer influence is apparent.

- Grade 11A - The learners did not create such a quiz as no one recalled it.

- Grade 11D - Sarah, Safia, Vinay and Brent recalled the lesson and created their own quizzes about themselves and their web site. Their usual seating positions are illustrated in Figure 6 - 28 but during the class they moved around.

Figure 6 - 28 Seating positions of Grade 11D learners with reference to their sharing of ideas and the quiz

~~No work~~ ~~Gino~~	Rob	Vinay	Kelly		Jason	~~Left~~	Brent	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig		Yusuf	~~No work~~ ~~Kader~~	Ricco	Imran	*4th row*
Safia	Robyn	Tessa	~~No work~~ ~~Alex~~	Aisle	Susan	Lara	Kate	Penny	*3rd row*
Sarah		Marc			Paul	Ross	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

5.2.2.10 Influence of peers

The following section summarises the work of the two classes with reference to the features used and the influence of peers. This is done by looking at the total number of features, gender and spreading of skills regarding features.

5.2.2.10.1 Grade 11A

Figure 6 - 29 illustrates the number of features used by Grade 11A learners in their web-based CV. The features include animated clipart images, mouse overs, thumbnails, animations with *CoffeeCup Firestarter* or *Flash* and animations with *Gif Animator* or similar. The features of frames, tile puzzles and crossword puzzles were not included in this summary as no learner in Grade 11A used them.

One male (blue) has the highest number of features used, 5; followed by two females (pink), 4. An equal number of males and females achieved 3. In this class the females predominate numerically.

Figure 6 - 29 Genders and number of features used by Grade 11A

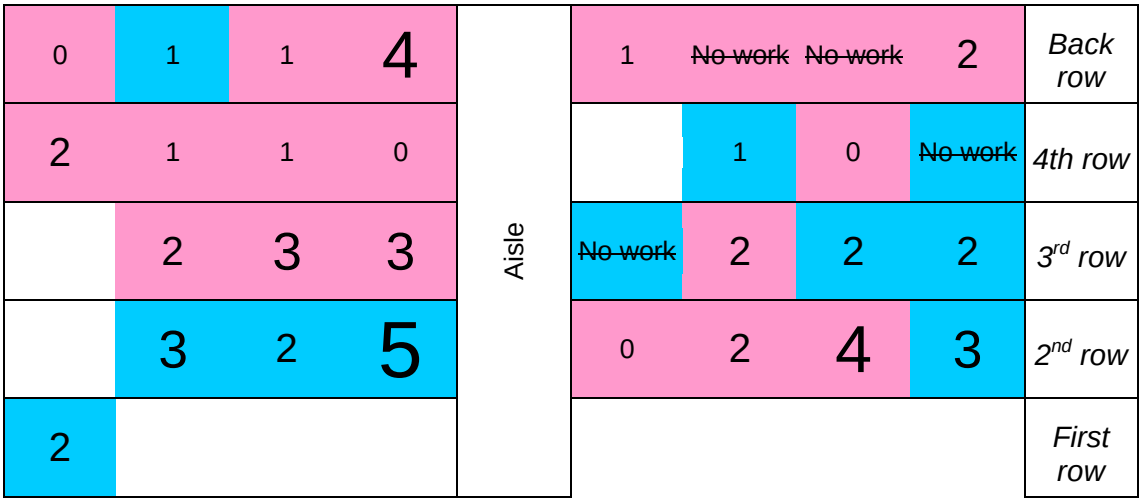


Table 6 - 8 compares the number of features used by Grade 11A based on gender. On average, while creating this web-based CV, the females used more features than the males. This may indicate that females used more creativity in web site creation as they are more creative or academically stronger or for any other reason, but this small sample is not wide enough to draw a conclusion.

Table 6 - 8 Comparison of features used by Grade 11A based on gender

Form of comparison	Male	Female
Number of features	21	29
No of learners who handed in	9	17
No of learners who did not hand in	2	2
% Of features per learner who completed the web-based CV	1.1	1.7

In this class the spread of skills outwards does not appear to be influenced by persons of a different gender seated next to one another.

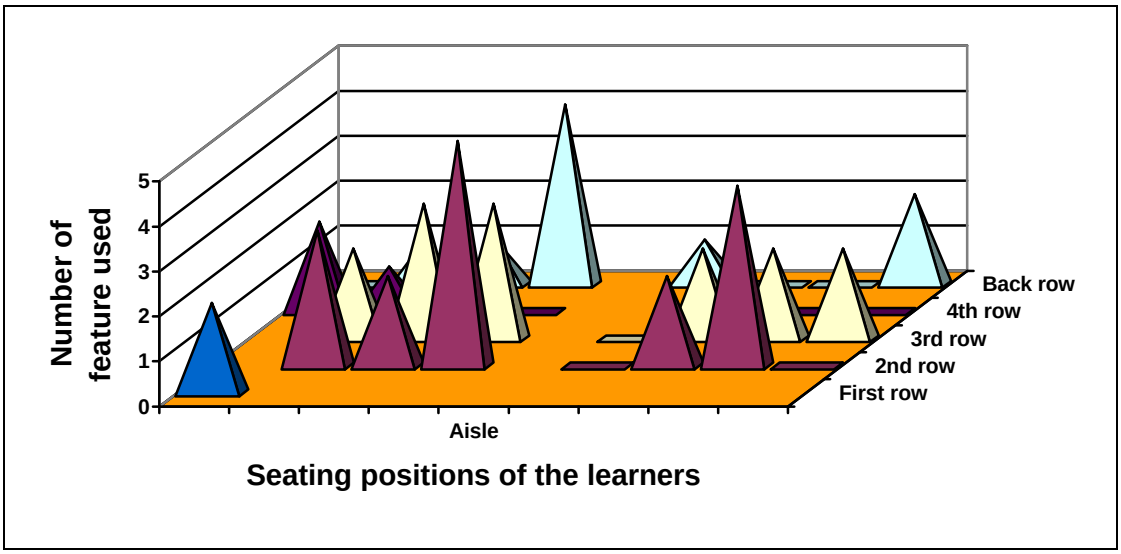
In Grade 11A, Figure 6 - 30 illustrates the spreading of the skills for the listed features. Radiating out sidewards from the 5 and 4 in the 2nd row, there are 3s and 2s indicating a sharing of skills. The learners in the 3rd row have shared their skills. The 4 featured in the Back row with a 1 nearby does not indicate a sharing of skills.

Figure 6 - 30 Spreading of the features in Grade 11A

0	1	1	4		1	~~No work~~	~~No work~~	2	*Back row*
2	1	1	0			1	0	~~No work~~	*4th row*
	2	3	3	Aisle	~~No work~~	2	2	2	*3rd row*
	3	2	5		0	2	4	3	*2nd row*
2									*First row*

Figure 6 - 31 illustrates the radiation of skills in Grade 11A. The high points in the 3D chart show the radiation of skills outwards in the 2nd row, but not from the high point in the Back row.

Figure 6 - 31 Spreading of the features in Grade 11A in 3D format



From an examination of the features used by Grade 11A a number of patterns are apparent:

- Skilful learners shared skills or their skills were copied.
- Learners extended themselves at the level of those seated next to them.
- Skills used diminish away from the centre.
- The learners' social skills contributed to their successful use of a number of features.

- The number of learners who did not complete their web-based CVs appears to have impacted on those near them, except with respect to one learner in the back row.

5.2.2.10.2 Grade 11D

It is not clear if the learners shared their skills with the persons seated near them for altruistic reasons or if similar-minded people or those with the same academic ability sat near each other. The following web features show strong tendencies for similar work among those learners seated near each other: graphics; thumbnails; animations made with *CoffeeCup Firestarter* or *Flash;* animations made with *Gif Animator*, *Gif Construction Set* or *Image Composer;* crossword puzzles; tile puzzles; quizzes; frames and image maps. They are discussed with particular reference to the seating arrangements in the computer laboratory. In the figures illustrating the seating arrangements, the genders are distinguished by blue for male and pink for female.

Susan, Lara, Kate and Penny (see their usual seating positions in Figure 6 - 32), shared ideas with each other and all added the maximum number of features they were able to add. These learners, more than any other group of learners, had similar features in their CVs.

Ross, Kurt and Paul even went so far as to share some of their creations with the learners seated near them. Ross' CV contained an image created by and credited to Kurt (see their usual seating positions in Figure 6 - 32). Paul used pictures from Kurt in his CV without any reference to Kurt. The proximity of Ross, Kurt and Paul to each other is illustrated in Figure 6 - 32.

Figure 6 - 32 Seating positions of Grade 11D learners who shared a great deal

~~No work~~ ~~Gino~~	Rob	Vinay	Kelly		Jason	~~Left~~	Brent	Dale	*Back row*
~~Left~~	~~Left~~	Jared	Craig		Yusuf	~~No work~~ ~~Kader~~	Ricco	Imran	*4th row*
Safia	Robyn	Tessa	~~No work~~ ~~Alex~~	Aisle	Susan	Lara	Kate	Penny	*3rd row*
Sarah		Marc			Paul	Ross	Brent	Kurt	*2nd row*
Jenna	Simon								*First row*

Figure 6 - 33 illustrates the number of features used by Grade 11D learners in their web-based CV. The features include animations with *CoffeeCup Firestarter* or *Flash*, animations with *Gif Animator* or similar, crossword puzzle, tile puzzle, quiz and frames. Two females (pink) and one male (blue) have the highest number of listed features, although in this class the males predominate. More females than males have a 3 although numerically the females are in the minority.

Figure 6 - 33 Genders and number of features used by Grade 11D

~~No work~~	3	5	3		2	~~Left~~	3	1	*Back row*
~~Left~~	~~Left~~	1	2		2	~~No work~~	0	0	*4th row*
5	3	2	~~No work~~	Aisle	3	3	3	5	*3rd row*
3	~~Sick~~	1			0	3	0	0	*2nd row*
1	2								*First row*

Table 6 - 9 compares the number of features used by Grade 11D based on gender. On average the females used more features than the males in creating this web-based CV. This may indicate that females used more creativity in their web site creation as they are more creative or academically stronger or for any other reason, but this small sample is not wide enough to draw a conclusion. A possible reason is that girls have better social skills than males and share ideas with each other. In

this class the spread of skills outwards does not appear to be influenced by persons of a different gender seated next to one another.

Table 6 - 9 Comparison of features used by Grade 11D based on gender

Form of comparison	Male	Female
Number of features	25	30
Number of learners who handed in their CV	16	10
Number of learners who did not hand in their CV	3	0
% Of features per learner who completed the web-based CV	1.5	3

In Grade 11D, Figure 6 - 34 illustrates the spreading of the skills required in creating and using the listed features. Radiating out sidewards from every 5 feature, there is a 3 that indicates a sharing of skills.

Figure 6 - 34 Spreading of the features in Grade 11D

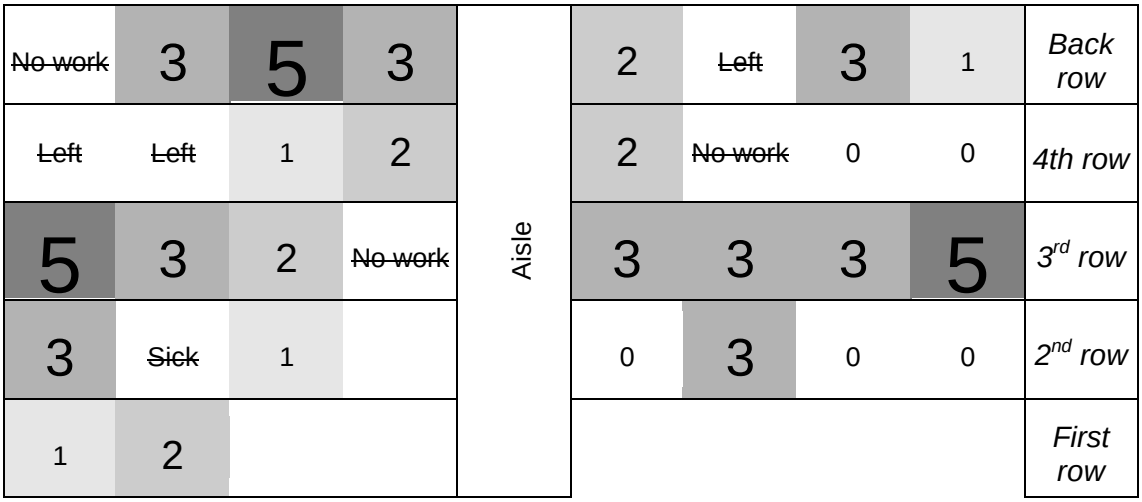
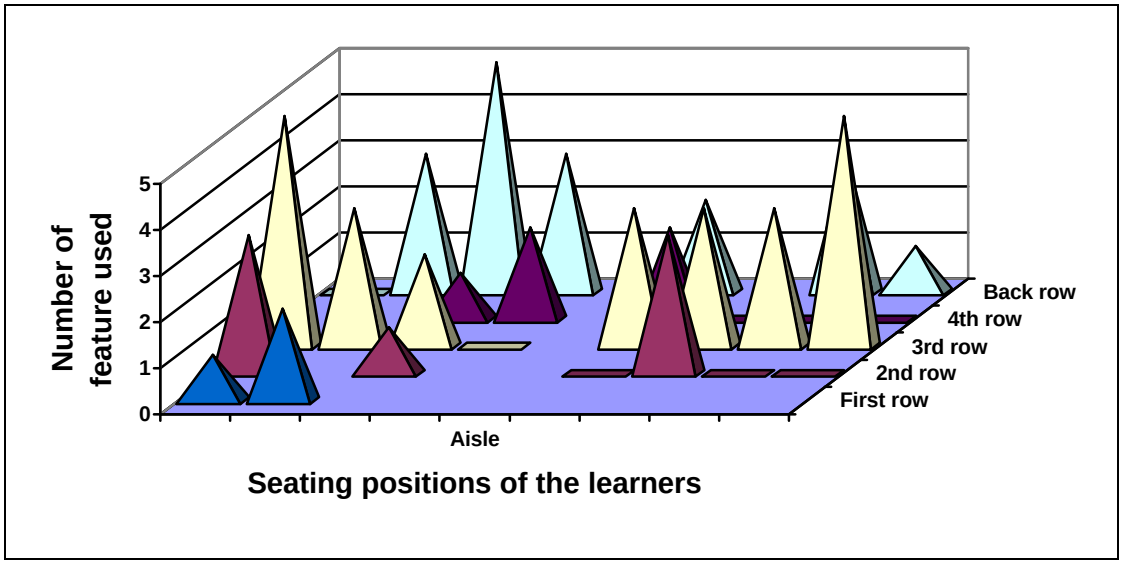


Figure 6 - 35 illustrates the radiation of skills in Grade 11D from the high points in the 3rd and Back rows.

Figure 6 - 35 Spreading of the features in Grade 11D in 3D format



From an examination of the features used by Grade 11D, a number of patterns become apparent:

- Talented learners shared skills or their skills were copied.
- Learners extended themselves at the level of those seated next to them.
- Skills used diminish away from the centre. Those learners who did not submit their web-based CV were at the end of a row where the learners showed diminishing use of features.
- The learners' social skills contributed to their successful use of a number of features.
- Females added more features than males.

Sarah sat on her own, in her own world, not influenced by what was happening in class and made her CV at home. Marc put very little effort into his work, but he seldom does much work in class, after school or at home. The boy who sat next to him was usually absent, so Marc had little influence from anyone.

5.2.2.10.3 Joint synthesis of influence of peers

The following can be deduced from the two classes with respect to the influence of peers:

- Skilful learners shared skills or their skills were copied.
- Learners extended themselves at the level of those seated next to them.
- Skills used diminish away from the centre.

- Possibly the learners' social skills contributed to their successful use of a number of features.
- Possibly, in the academically bright Grade 11D class where the learners were less able to move their seating positions as there were fewer open seats, learners added more features as they had more time to develop social relationships in their fixed seating positions.

5.2.3 Managing time

Of the Grade 11A learners who did not hand in their work:

- Wafiq's work was somehow deleted from his computer or as he wrote the 'computer had deleted his work, unfortunately'.
- Lisa's home was burgled and she lost all her work on computer.
- Megal apparently had no time to make her web CV.
- Chad gave no reason for not completing his web-based CV, just a shrug of the shoulders.
- Roxanne handed her work in late because she had been ill.

Of the Grade 11D learners who did not hand in their web-based CVs:

- Kader had not finished his work in time, and had not tried to negotiate with me to hand it in late. He also did not seem to be too perturbed about it.
- Gino also had not finished his work in time, and had not tried to negotiate with me to hand in late. He also did not seem to be too perturbed about it.
- Alex did not hand in his work, probably as he did not know how to make a web page, even after being taught in class.
- Kurt handed his work in late as he had been ill, but is often ill when work is due.

Many of the learners had to juggle their time. Jason and Kelly in Grade 11D were very involved in sport and leadership activities and had to find a quick way of obtaining high marks. Imran (Grade 11D) and Avril (Grade 11A) were very involved in national sporting codes and had great difficulties in coping.

- Jason looked at the rubric and just added enough features in order to obtain a high mark.
- Kelly seemed to find enough time to create a good web-based CV.
- Avril worked studiously in class trying her best to manage although she had missed many classes while on sporting tours.

- Imran had been absent on national and international sporting tours and barely knew how to make a web site. He was very demoralised when he watched his peers in Grade 11D making exciting web sites. After some days spent very depressed, he seemed to rally himself and eventually produced a CV, albeit a poor one.

It was satisfying to see so many learners hand in their work on time as a result of hard work and the management of time, especially in a school where one loses percentages on a sliding scale for late work, a policy I do not follow.

5.2.4 Mental state

The learners enjoyed working on their web-based CV.

- There was no sign of computer anxiety.
- The only stress, if any, was deciding what to put in the text format of the CV. Academically challenged learners with a poor command of text- based language had difficulty formulating what to include and how to write their CV. The learners who struggled were not necessarily English second or third additional language learners, but rather academically weak learners.
- Learners in Grade 11A or the academically challenged class, once they found something they enjoyed doing, spent time on it for the pleasure of doing it. They did not seem to worry about the lack of advanced features for a high mark, but like Carlo and Lyle (both created animated gifs with *Gif Animator*) or Avril (animated clipart graphics) spent a great deal of time on what they could do or enjoyed doing.
- Learners in Grade 11D or the academically strong class, seemed to work on difficult aspects of the CV until they perfected them.

5.2.5 Summary of interaction with information from an affective perspective

The manner in which the learners affectively interacted with information in the *contact* educational digital environment was discussed in the preceding section. The findings are summarised and tabulated in Table 6 - 10 focusing on motivation, the influence of peers, managing time and mental state, behaviours and activities discussed in Section *6, Synthesis and profile* in Chapter 2.

Table 6 - 10 How the learners affectively interacted with information during the process of creating the web-based CV

Affective perspective	Affective interaction
Motivation	• The learners were intrinsically motivated to create their own web-based CV. • They were extrinsically motivated to obtain high marks. • Grade 11D, or the academically strong class, were more motivated to obtain high marks than Grade 11A, or the academically weak class. • Grade 11A, or the academically challenged class, were motivated by the graphics, interactivity of web site features; and by creating a web-based CV about themselves.
Influence of peers	• The learners supported and helped those seated physically near them in a non-competitive way. • The learners were critical of their own digital creations, endeavouring to make them better for the motivational reasons above. • Some learners supported each other in kind, for example, with ready-made graphics.
Managing time	• For most of the learners using their choice of software was more important than utilizing time well. A number of learners wasted time in class preferring to do their work at home with other software as the web-authoring features of *FrontPage* irritated them. • The learners lost themselves in their work forgetting about time. • Most of the learners submitted their work in time, despite their initial unease about the amount of time devoted to the web-based CV.
Mental state	• Academically challenged learners did not suffer from computer anxiety, leaving advanced features alone. • Academically strong learners repeatedly worked with a feature until they perfected it. • Both groups of learners accepted error and tried to resolve their own problems, up to a certain level. • Both classes were adventurous and willing to explore new features, up to a point, based on their ability. Both groups were ready to explore the digital unknown, up to a point.

Table 6 - 10 summarises how the learners affectively interacted with information based on certain behaviours and activities. In general:

- All the learners were intrinsically motivated to create a web site by the features of a web. However, the academically strong learners were extrinsically motivated to by marks, whereas the academically weaker learners were not.
- Interacting with and physically working near other learners motivated the learners to create a web site with advanced features.

- Time did not overly worry the learners - they spent long periods working on what they enjoyed and preferred to use software of their own choice at home, not using the time set aside for web development in class using 'unsuitable' software.
- The learners enjoyed creating the web, repeatedly trying to develop new features until they were satisfied, and explored the features of the selected applications.

Table 6 - 11 indicates where the affective behaviours or activities tabulated in the literature review, Table 2 - 27 in Chapter 2, and the way in which the learners created the web-based CVs in the *contact* environment of the classroom, have common ground examining it from the affective perspectives of motivation, the influence of peers, managing time and mental state.

Table 6 - 11 Comparing affective behaviour or activity from the literature with the way in which the learners created their web-based CVs

Affective perspective	Affective behaviour or activity from the literature review	Common ground	Interaction with information while creating the web-based CV
Motivation	• Intrinsically motivated	✓	• Learners were intrinsically motivated to create their own web-based CV.
	• Extrinsically motivated	✓	• Learners were extrinsically motivated to obtain high marks.
	• Not found in the literature review	⇨	• Learners in the Grade 11A, or the academically weak class, were more intrinsically motivated by the graphics, interactivity of web site features and by creating a web-based CV about themselves, than extrinsically motivated by good marks.
	• Not found in the literature review	⇨	• Learners in Grade 11D, or the academically strong class, were more extrinsically motivated to obtain high marks than the Grade 11A or the academically weak class.
Influence of peers	• Learn in a positive social environment	✓	• Learners supported and helped those seated physically near them in a non-competitive way by showing them various web-based computer skills.
	• Critical of their own digital creations, i.e. want to correct and redo, to impress peers	✓ X	• Learners were critical of their own digital creations, for extrinsic and intrinsic motivational reasons, and not to impress their peers.
	• Learn with group ownership	✓	• Some learners supported each other in kind, for example, with ready-made graphics. No selfish or unhelpful behaviour was shown.
	• Want the independence to find / create their own learning resources	NA	• Learners were not required to create their own learning resources but they showed a tendency to want to use their own resources, i.e. software.

Affective perspective	Affective behaviour or activity from the literature review	Common ground	Way in which the learners created their web-based CVs
Managing time	• Want useful, relevant information	NA	• Learners had to create their own information, not find relevant information.
	• Want fast access to information resources	NA	• Learners had to create their own information, not obtain fast access to information.
	• Not found in the literature review	⇨	• Time was not an issue when presented with the choice of 'inferior' software and class time, or 'superior' software and their own time. Own choice of software was of great importance.
	• Not found in the literature review	⇨	• Learners lost themselves in their work forgetting about time.
	• Not found in the literature review	⇨	• Most of the learners submitted their work in time, despite their initial unease about the amount of time devoted to the web-based CV.
Mental state	• Do not suffer from computer anxiety	✓	• Learners did not suffer from computer anxiety perhaps because they helped one another.
	• Willing to try a number of options and accept error	✓ ⇨	• Both groups of learners accepted error and tried to resolve their own problems, up to a certain level.
	• Adventurous, creative, ready to explore the digital unknown	✓ ⇨	• Both classes were adventurous and willing to explore new features, up to a point, based on their assumed ability. Both groups were ready to explore the digital unknown, up to a point

Based on Table 6 - 11 the following behaviours or activities were *present* in Table 2 - 27 where the affective profile of a South African FET learner in a digital environment was tabulated based on the literature review, and in the creation of the web-based CV:

- Intrinsically motivated
- Extrinsically motivated
- Learn in a positive social environment
- Critical of their own digital creations
- Learn with group ownership
- Do not suffer from computer anxiety
- Adventurous, creative, ready to explore the digital unknown

Tabulated in Table 6 - 11 behaviours or activities *not found* in the literature review but present at PHS when the learners created a web site in a *contact* situation were:

- The academically weak class was more intrinsically motivated by the graphics, interactivity of web site features and by creating a web-based CV about themselves, than extrinsically motivated by good marks.
- The academically strong class was more extrinsically motivated to obtain high marks than the academically weak class.
- Time was not an issue when presented with the choice of 'inferior' software and class time, or 'superior' software and their own time. Own choice of software was of great importance.
- Learners lost themselves in their work forgetting about time.
- Most of the learners submitted their work in time, despite their initial unease about the amount of time devoted to the web-based CV.
- Both groups were ready to explore the digital unknown, up to a point.
- Academically weak learners were more likely not to attempt something that was beyond their assumed ability.

Table 6 - 11 compared the literature review and the behaviours or activities in the classroom when the learners created their web-based CV in a contact situation examining it from a cognitive perspective. There was much concurrence between the literature review and the behaviours or activities in the classroom in the creation of the web-based CV. Many behaviours or activities not found in the literature review were found in the creation of the CV.

5.3 Physical perspective

The following section will examine how the learners interacted with information in a *contact* digital environment from a physical perspective looking particularly at acquiring, recalling, processing and planning, and presenting information from a broad physical perspective.

5.3.1 Acquiring information

The learners spoke and interacted with each other while acquiring the web-authoring skills. The room was seldom quiet as there was always someone demonstrating a particular skill. There was little physical showing and sharing of personal CV information or graphic images, as the learners were too busy and involved in the creation of the CV.

5.3.2 Recalling information

The learners discussed web-authoring skills taught earlier in the year with each other. They seemed to recall those skills that were within their capabilities, see 5.2.4, Mental state. The learners quietly recalled information about themselves in order to add to their web-based CV.

5.3.3 Processing and planning

The following will discuss the physical aspect of the processing of the web-based CV, how the learners created the CV, software used, place where the work was done and the technical problems encountered.

5.3.3.1 Physical creation

The learners do not have keyboarding skills which inhibited their keying in of information. They did not seem to be aware that they could have worked quicker had they been able to do keyboarding. All learners were able to use a mouse.

The laboratory in which they worked had the workstations in rows. The learners were permitted and were able to look at the workstations on either side and could see those in front of them. Learners were able to get up and walk around to look at each other's work. Talking was permitted in the room and only discouraged when it

became too loud. Although the learners did move around the room and looked at their friends' work, they looked mainly at the work of those in their own rows. As they discussed their work a great deal there was a continual quiet hum in the computer laboratory.

Throughout the Section 5.2.2, Influence of peers, the similar features found in the CVs of learners seated next to each other, were attributed to friendship. It was not considered that learners would share ideas with those near them unless they were friends, but the evidence of the use of the following features may indicate the influence of proximity as well as friendship:

- Frames by Grade 11D (Figure 6 - 12)
- Animated clipart images by Grade 11A (Figure 6 - 13)
- Thumbnails by Grade 11A (Figure 6 - 17)
- Thumbnails by Grade 11D (Figure 6 - 19)
- Crossword puzzle by Grade 11D (Figure 6 - 21)
- Animations with *CoffeeCup Firestarter* or *Flash* by Grade 11D (Figure 6 - 23)
- Animations made with *Gif Animator, Gif Construction Set* or *Image Composer* by Grade 11A (Figure 6 - 24)
- Animations made with Gif Animator, Gif Construction Set or Image Composer by Grade 11D (Figure 6 - 26)

5.3.3.2 Use of software and place of work

Three of the learners made their web-based CVs at home as the school did not have the web editors they preferred to use. Most of the learners made their CVs using *FrontPage* plus other software programs. They enjoyed working at school, with their peers, creating objects that moved (animations, mouse overs, thumbnails) and permitted input (crossword puzzle, tile puzzle, quiz). A number of the learners used the computer laboratory in the afternoons to work on their CVs and explore the software packages. Although they enjoyed exploring the packages and adding interactivity, they did not really use all the features listed in the instructions. Either they did not read the instructions properly, as apparent after the event, or they did not actually put meaning to the computer or web terminology words such as mouse over (comments from Simon).

5.3.3.3 Technical features

Technically the CVs had few problems. However, these problems did not influence the work of the learners when they created their web-based CVs. The few problems that occurred were:

- Links that did not work were the most common problems, but there were few of those problems.
- The three video clips took a long time to load, even from a hard drive or CD-ROM. Over the World Wide Web they would have been almost impossible.
- The five sound clips did not work on my computer. I am not sure if they worked on the learners' computers.
- The crossword puzzles took a long time to load but nevertheless all seemed to work.
- *CoffeeCup Firestarter* and *Flash* introductions took a long time to load from the CD-ROM on which all the CVs were stored. Over the Internet it may have been a problem.

5.3.4 Presenting information

The information was presented on CD-ROM or on 3 ½ disks. This did not pose a problem. The CVs were transferred to the network to my directory for safekeeping and privacy, in anticipation of being used in the Matriculation year.

5.3.5 Summary of interaction with information from a physical perspective

The manner in which the learners interacted with information from a physical perspective in the *contact* educational digital environment was discussed in the preceding section. The findings are summarised and tabulated in Table 6 - 12 looking at how the learners acquired, recalled, processed and planned information, behaviours or activities discussed in Section *6, Synthesis and profile* in Chapter 2.

Table 6 - 12 How the learners interacted with information from a physical perspective during the process of creating the web-based CV

Physical perspective	Physical interaction
Acquiring information	• Learners spoke to and shared web-authoring skills with their peers, acquiring them in the process.
Recalling	• Learners spoke to each other recalling web-authoring skills taught previously.
Processing / planning information	• Learners keyed in their information slowly. • Learners were able to use input devices such as a mouse competently, but not the keyboard. • Learners interacted with each other and the computer, working and looking at each other's screens. • Learners spoke to each other as they worked. • All learners worked at a workstation during the period set aside for the web-based CV, although three worked and fiddled on non web-based CV related matters. • Correct software was very important to certain learners.

Table 6 - 12 tabulated the way the learners physically worked in the digital environment creating their web-based CVs. Most learners worked at their workstations interacting with those near them, looking at each other's screens and discussing matters with them. They spoke and interacted with other learners as they acquired new web-authoring skills and recalled previously taught skills.

Table 6 - 13 indicates where the physical behaviours or activities tabulated in the literature review, Table 2 - 28, and the way in which the learners created the web-based CVs in the *contact* environment of the classroom, have common ground. How the learners interacted with information is examined looking at how they acquired, recalled processed and planned information from a physical perspective.

Table 6 - 13 Comparing physical behaviour or activity from the literature with the way in which the learners created their web-based CVs

Physical perspective	Physical behaviour or activity from the literature review	Common ground	Interaction with information while creating the web-based CV
Acquiring information	• Look for required data using digital features	NA	• Learners were not required to obtain any data, but rather create their own.
	• Move continually onto a new feature in the digital environment, continuing the flow state	NA	• Learners were not required to obtain information in a digital environment.
	• Read certain areas of the screen first in preference to others	NA	• Learners were not required to read the new screens in order to obtain information.
	• Read text in a digital environment relatively slowly	NA	• Learners were not required to obtain information in a text-based format in a digital environment.
	• Skim and reread certain portions of the screen	NA	• Learners were not required to obtain information on a screen.
	• No specific information found in the literature review	⇨	• Learners spoke as they acquired web-authoring skills from their peers.
Recalling information	• No specific information found in the literature review	⇨	• Learners spoke as they recalled web-authoring skills taught earlier in the year.

Physical perspective	Physical behaviour or activity from the literature review	Common ground	Interaction with information while creating the web-based CV
Processing / planning information	• Work / learn actively doing things	✓ ✓ ✓	• Learners seldom sat still for any length of time, they were usually active doing things, such as using input devices. • Learners were able to use input devices such as a mouse and scanner competently, but not the keyboard. The learners keyed in their information slowly. • All learners worked at a workstation during the period set aside for the web-based CV, although three worked and fiddled on non web-based CV related matters.
	• Work / learn in a group with talking	✓	• Learners interacted with each other and the computer, working, talking and looking at each other's screens.
	• Work with partner, share ideas and copy work	✓	• Features were copied or shared with learners seated near each other particularly in Grade 11D.
	• Choice of software	⇨	• Experienced users preferred the software they were used to and would not use the inexpensive software found at school.
Presenting information	• No specific information found in the literature review	NA	• Nothing noted.

Based on Table 6 - 13 the following behaviours or activities were *present* in Table 2 - 28 where the physical profile of a South African FET learner in a digital environment was tabulated based on the literature review, and in the creation of the web-based CV:

- Work / learn actively doing things
- Work / learn in a group with talking
- Work with partner, share ideas and copy work

Tabulated in Table 6 - 13 behaviours or activities *not found* in the literature review but present at PHS when the learners created a web site in a *contact* situation were:

- Learners spoke as they acquired web-authoring skills from their peers.
- Learners spoke as they recalled web-authoring skills taught earlier in the year.
- Experienced users preferred the software they were used to and would not use the inexpensive software found at school.

Based on Table 6 - 13 there was concurrence in the way learners physically processed and planned information between the literature review and the creation of the web-based CV at PHS: The learners worked actively in groups doing things and talking

5.4 Conclusion of analysis

This thesis describes how learners interact with information in a digital environment from cognitive, affective or physical perspectives. This case study describes how learners interacted with each other and information in a *contact* digital environment, particularly looking at motivation and the influence of their peers.

The analysis of the Grade 11A and Grade 11D learners' web-based CVs discussed how the learners created their CVs from cognitive, affective and physical perspectives. The perspectives used for the cognitive, affective and physical interaction were obtained from the literature review.

Tables 6 - 14, 6 - 15 and 6 - 16 summarise the ways in which the FET learners at PHS interacted with information from cognitive, affective and physical perspectives respectively in the *contact* digital environment while creating a web-based CV. In each of the three tables the evidence is introduced via the perspective, followed by

the form of behaviour or activity. The way in which the learners at PHS worked in the digital environment is then described.

Table 6 - 14 Evidence of interaction with information in the contact educational digital environment from a cognitive perspective

Cognitive perspective	Cognitive behaviour or activity	Interaction with information in the contact educational digital environment
Acquiring information	• Learning and mentally processing information	• Learners acquired web-authoring skills influenced by their peers.
Recalling information	• Long term memory recalled	• Learners recalled web-authoring skills through interacting with their peers.
Processing / planning information	• Planning / creating of digital projects	• The learners did not preplan their CV but created it as they went along.
	• Use of higher-level thinking skills	• About half of the learners developed a CV arranged with pages and hyperlinks at two levels using higher-level thinking skills. As they developed interactive features they used meaningful higher-level thinking skills. The learners modelled or structured their CV using higher-level thinking skills.
Presenting information	• Cognitive processing of screen-based material	• Most learners had spelling errors on their web pages that they had not seen when they created the site, indicating superficial reading of screen-based material.
	• Ability to communicate their understanding of the subject matter in multiple formats	• Grade 11D, or the academically strong class, were better able than Grade 11A, or the academically weak class, to create interactive features and communicate the subject matter in multiple formats. • Static and animated clipart images added to the web pages seldom complemented the content. • Interactive features complemented the content. • The learners had difficulty mentally processing and creating the text-based information required.

Table 6 - 15 Evidence of interaction with information in the contact educational digital environment from an affective perspective

Affective perspective	Affective behaviour or activity	Interaction with information in the contact educational digital environment
Motivation	• Intrinsic motivation	• Learners were intrinsically motivated to create their own web-based CV.
	• Extrinsic motivation	• Learners were extrinsically motivated to obtain high marks.
	• Types of motivation for different ability learners	• Grade 11A, or the academically weak class, were more intrinsically motivated by the graphics, interactivity of web site features and by creating a web-based CV about themselves, than extrinsically motivated by good marks. • Grade 11D, or the academically strong class, were more extrinsically motivated to obtain high marks than the Grade 11A, or the academically weak class.
Influence of peers	• Social environment	• Learners supported and helped those seated physically near them in a non-competitive way by showing them various web-based computer skills.
	• Critical appraisal of own digital creations	• Learners were critical of their own digital creations, for extrinsic and intrinsic motivational reasons, and not to impress their peers.
	• Group ownership of created material	• Some learners supported each other in kind, for example, with ready-made graphics. No selfish, unhelpful behaviour was shown.
Managing time	• Time spent on work	• Learners lost themselves in their work, forgetting about time.
	• Meeting deadlines	• Most of the learners submitted their work in time, despite their initial unease about the amount of time devoted to the web-based CV.
Mental state	• Computer anxiety	• Learners did not suffer from computer anxiety.
	• Acceptance of error	• Both groups of learners accepted error and tried to resolve their own problems up to a certain level.
	• Willingness to explore the digital unknown	• Both classes were adventurous and willing to explore new features, up to a point, based on their assumed ability. Both groups were ready to explore the digital unknown, up to a point.

Table 6 - 16 Evidence of interaction with information in the contact educational digital environment from a physical perspective

Physical perspective	Physical behaviour or activity	Interaction with information in the contact educational digital environment
Processing / planning information	• Work / learn actively doing things	• Learners seldom sat still for any length of time; they were usually active doing things, such as using input devices. • Learners were able to use input devices such as a mouse and scanner competently, but not the keyboard. The learners keyed in their information slowly. • All learners worked at a workstation during the period set aside for the web-based CV, although three worked and fiddled on non web-based CV related matters.
	• Work / learn in a group with talking	• Learners interacted with each other and the computer, working, talking and looking at each other's screens.
	• Work with partner, share ideas and copy work	• Learners copied and shared the skills of creating interactive features with those seated next to them. In the class where the learners were physically closer to each other, more features were shared.
	• Choice of software	• Time was not an issue when presented with the choice of 'inferior' software' and class time, or 'superior' software and their own time. Own choice of software was of great importance.

In the preceding tables, Table 6 - 14, Table 6 - 15 and Table 6 - 16, the way in which learners acquire, recall, process and present information is tabulated from cognitive, affective and physical perspectives. The information can be summarised as follows:

- Peers influenced the acquisition and recall of information. Learners helped each other when they sat near each other learning new features and providing motivation to explore the applications.
- Higher-level thinking skills were exhibited when the learners created the CV, particularly when they used frames, image maps and webs with different levels.
- Interactive features that required much work to create, complemented the content.
- The constant interaction of the learners with each other caused a continual buzz in the computer laboratory.
- The learners coped with error, up to a level.
- The academically challenged learners were motivated and affirmed by creating a web about themselves. Obtaining high grades motivated the academically bright learners.

6 Measures to ensure validity and reliability

Measures were taken to ensure validity and reliability. In order to enhance internal validity the strategies based on Merriam (1998, p. 204) and McMillan and Schumacher (1993, p. 391) were used. These strategies included triangulation, long-term observation, member checks or learner validation, field research, peer examination and looking at the researcher's bias.

6.1 Triangulation

In order to triangulate the findings the

- learners were observed as they worked;
- web-based CVs were examined by myself and results placed in a spreadsheet;
- learners corroborated the results of the spreadsheet;
- learners' comments about their web-based CVs six months after the initial making of the CVs were noted;
- learners confirmed the data in the case study; and
- colleagues confirmed the findings.

6.2 Observation of the learners

I have worked with the learners over a two-year period during which time they have become accustomed to me, and vice versa. This case study itself is based on a two weeks' observation when the learners created their web-based CV. Information in the questionnaire was examined in the light of knowledge of and long-term observation of the subjects.

6.3 Learner validation of the spreadsheet

In order to get the learners to check and validate the figures, they were encouraged to check the figures in the spreadsheet. The learners were given the spreadsheet illustrating all the statistical data about their web-based CV two weeks before the final submission of their Matriculation project. During these final two weeks they were given the opportunity to improve their work. They were asked to check the data in the spreadsheet against their web-based CV. They did this with interest and motivation, as they were eager to find extra points to improve their grades.

The learners checked my numbers in the spreadsheet which

- counted every animated gif with *CoffeeCup Firestarter* or *Flash*, animated gif with *Gif Animator* or similar, drop down box, feedback form, guest book, jigsaw puzzle, quiz, mouse over, thumbnail, tile puzzle, crossword;
- counted every animated gif, clipart, static picture, sound clip, video clip, background;
- noted the shared borders, frames, image maps; and
- noted spelling mistakes, levels of information, structure, amount of information and technical quality.

6.4 Learner validation of the printed case study

Two weeks before the final submission of their Matriculation project and about six months after making the web-based CV, the learners were asked to check and comment on the printed case study during class time, noting accuracy and interpretation. The case study was put on the shared network which is accessible to all and the learners did a 'Find' looking for their own names. This checking of the printed case study took place before their names were changed in order to ensure anonymity. The checking happened on three consecutive days with the hope that, with time and reflection, the learners might wish to comment on and change my

interpretation. During this checking, the learners looked critically at my work hoping to gain ideas of what met with my disapproval in order to improve their work for the final submission of the Matriculation project.

The learners showed their peers their names and discussed my findings:

- Carlo and Lyle requested that changes be made with reference to the details about their animations.
- Jenna refuted some data which I then changed.
- Sarah and Kurt concurred with my comments about them.
- Tamlyn told me she learned from and with the persons seated next to her.
- Avril smiled at the references to her time management.
- Jared, Craig and Jason discussed the amount of information found in their CVs and the CVs in general, and were disapproving of the whole idea of a web-based CV.

6.5 Field research

The research was done in a natural environment for this particular case study, observing learners dynamically interacting with information in a digital environment, which was also the aim of the research.

6.6 Colleague examination of the data

Few members of the school staff have commented on the findings as they have been made.

- Neil Eddy, the mathematics teacher, suggested that the learners were not necessarily sharing their work. He put forward the idea that similar-minded learners sat with each other, hence their doing similar forms of work (Eddy, 2002). Four learners, Susan, Lara, Kate and Penny, commented on his comment. They indicated that although they sat near each other and shared with each other, they were not friends, but shared because they sat near each other.
- The principal, Dave Arguile, read the case study and commented that it was 'interesting'.

6.7 Researcher bias

My underlying bias, if there is one, is to find a better way of getting all learners to work to their full potential. My aim would be looking to see if the learners were working to their fullest potential and, if they were not, to find out why.

7 Summary

Case Study 2 is an investigation into how learners create a web-based CV in a *contact* digital environment. The chapter commenced by describing the participants in the study looking at:

- Numbers of learners who completed the entry and questionnaire
- Distribution of learners by race and gender
- Numbers of learners who submitted their entries
- Ownership and use of digital devices
- Seating positions of the learners in the computer laboratory

The data collection methods were described looking at Observation, the Event log, Document analysis and Interviews. The process of making the web-based CV was described from setting the background, to the start, in progress and submission stages. The completed web-based CV was analysed with respect to how the learners created the site from cognitive, affective and physical perspectives. A detailed summary indicating how they interacted with information in the *contact* digital environment was developed. The chapter concluded by describing the measures taken to ensure validity and reliability.