

Original Research Article

A STUDY OF THE EFFECTIVENESS OF AN INTRODUCTORY COMPUTER COURSE ON STUDENTS' PERFORMANCE AND ATTITUDE

ABSTRACT

The objective of this paper is to determine whether the introductory computer course in Preparatory Year Program (PYP) influences students' performance and attitude towards computer studies in Qassim University, Saudi Arabia. The instrument employed for examining the attitude towards computer studies is Computer attitude scale (CAS) by Loyd and Gressard. A questionnaire is prepared for investigating students' perceived computer skills. This paper is an analysis of the computer attitudes and skills of all students enrolled in PYP. Measures were taken at two points during the course: at the beginning of the course and at the end of the course. A paired sample t-test is applied using SPSS, version 21 to find the significant difference in the attitude and skills. This study concluded that in computer knowledge, and in promoting positive attitudes towards computer skills, the PYP program achieves significant increases in these areas. The course proved to effectively improve students' attitude and skills.

Keywords: Preparatory Year Program, Computer attitude Scale, Questionnaire, Paired Sample t-test, SPSS.

1. INTRODUCTION

At many Universities in Saudi Arabia, it is compulsory for the students to do a one-year program called Preparatory Year Program (PYP) after they finish high school. The Preparatory Year Program (PYP) acts as a bridge between the students' high school education and university study. The main goal is to enhance the students' English language skills to the level required in freshman courses conducted in English. The English program is sharply focused on what the students will need to achieve for their success in freshman studies and beyond. It is not a general English program but also focuses on English for Academic Purposes (EAP). Based on PYP merits, students can opt for differing specialties like computer science, Pharmacy, or limited medical specialties, or course available to female students at Qassim University.

There are some specific reasons, which lead to decline in enrollment of female students in Computer Science College. For investigating those reasons, computer attitude and skills are examined at the beginning and at the end of the introductory computer course in PYP. According to the Bureau of Labor statistics [1], computer and information technology are two of the fastest growing occupations globally for both gender. However, still many institutions are experiencing declines in enrollment in computer science programs [2-4]. Thus, the present study was initiated to determine the attitude and skills of female students towards computers during the introductory course in PYP. The aim was to study the effect of this introductory course on female students' attitude and performance.

Attitudes matter a lot to adopt any technology. If students adopt computer technologies, they must develop optimistic kind of attitude towards computer. It is more important to develop positive attitudes than to increase computer skills as 'positive attitudes will automatically lead to the learning of computer skills'. Many researchers have done research to find the relation between computer attitudes and computer skills. The importance of computer attitudes to adopt new technologies is widely discussed by Loyd & Gressard (1984) [5], Koohang (1989) [6], Divine & Wilson (1997) [7] and many more. Loyd & Gressard developed Computer Attitude Scale (CAS) to find computer attitudes, in which 'attitudes' is divided in to four constructs, 1) computer anxiety; 2) computer confidence; 3) computer liking; and 4) computer usefulness. In the present paper, CAS is used to find the measures at two points during the class: at the beginning and at the end.

Computer skills or Computer literacy is the ability to use computer efficiently from elementary use to programming and advanced problem solving. Nafisah (1997) [8] divided computer skills into two main parts: 1) Basic Computer Skills and 2) Software application skills. An instrument is designed by Abdul Malek (1999) [9] to measure computer skills which is used in the paper.

The paper comprises of seven sections. The first section is introductory in nature. The second describes the background and literature review. In the third section, the introductory computer course has been described. The forth section describes the methodology. The fifth section includes analysis of the results followed by discussion together with the conclusion in the sixth section. And finally, the topic for future work has been suggested in the seventh section.

2. LITERATURE SURVEY

Computer technology is increasing at a very high pace. In fact, it has revolutionized both teaching and learning process and computer science studies/technology has received increasing attention by many educators in recent years. Commitment is required from both students and teachers to integrate computers in the teaching and learning process. Students' attitude towards computer study should be positive to enhance learning computer skills. Hong, Ridzuan and Kuek [10] found that students with better basic computer skills generally have more positive attitudes towards the use of computer for learning purposes. Shaft et al. [11] explained the Reliability assessment of the attitude towards computers instrument (ATCI). The computer is a very important learning tool for the growth and development of a student's career. Students must have an optimistic attitude towards computer study and should be aware of the rapid changes in technology. Divine and Wilson (1997) explained that developing a positive attitude among students is more important than increasing computer skills because a positive attitude will automatically lead to the improvement of computer skills.

Many researches [12-14] showed the importance of attitudes for learning when using new technologies. Aiken [15] defined attitude as a "learned predisposition to respond positively to certain objects, situations, institutions, concepts or persons". Dusick [16] also defined attitude as "an evaluative disposition based upon cognition, effective reactions, behavior intentions, and past behaviors which can influence future cognitions, effective responses, intentions, and behaviors".

Dalton & Goodrum [17] found that those who studied programming had improved problem skills and attitudes towards computers over a control group with no programming offered. Koohang (1989) investigated the effect of experience in programming and spreadsheets on attitudes towards computer studies. Farkas [18] proved that there is a statistically significant decrease in positive attitudes towards computer studies as a result of learning programming. This paper describes a study conducted at Qassim University, Saudi Arabia that was done as an experimental attempt to assess the effectiveness of the introductory course on the attitude and performance of female students.

Research Objectives of our study are:

- To find the effectiveness of the introductory course on the attitude towards computer study of the female students in Saudi Arabia.
- To find the effectiveness of the introductory course on the general performance of the female students in Saudi Arabia.
- To investigate reasons which led to a decline in enrollment of female students in Computer Science College after PYP.

3. THE INTRODUCTORY COURSE

The students study two main Computer Science Courses at Qassim University. The First Course is "CSC105" that students study in the first semester of their preparatory year program. The CSC105 course includes all the basic subjects of Computer Science, i.e. PC Basics, Windows and Microsoft Office Suite

(MS Word, MS PowerPoint, MS Excel and MS Access). The objective of the course is to prepare students for freshman science courses taught in English by emphasizing knowledge of the essential concepts of IT. Students should be able to use a personal computer and common computer applications at a recognized level of competence. In the 2nd Semester of their preparatory year, students study CSC111 course, i.e. Programming in Java language. Programming language is one of the most important tools used to communicate with a computer. In addition, among all the programming languages, Java is most widely used. Billions of devices are using Java applications. The objective of this course is to provide an introduction and fundamental concepts of programming, algorithmic thinking, and computational problem solving. The programming language Java is used to introduce basic programming techniques. Students will gain some proficiency with the programming techniques, and the skills and tools necessary for computing practices. (Appendix 1 & 2)

4. METHODOLOGY

The methodology comprises of three subsections: 1) Sampling procedure and Sample; 2) Instrumentation; and 3) Statistical Analysis.

4.1 Sampling Procedure and Sample

The participants of the study were 172 female students enrolled in PYP of Qassim University, Saudi Arabia. Data collection was done by distributing and collecting the survey before and after the course. The present survey study was done with the help of Likert type questionnaire, comprising mainly of three sections. The first section was related to general information; the second section was comprised of Loyd Gressard Computer Attitude Scale (Appendix 3); and finally, Perceived Computer Skills were assessed in the third section. (Appendix 4)

In order to investigate the effect of the introductory computer course (CSC105 & CSC111), measures were taken at two points during the course: at the beginning and at the end. The questionnaire was given to students in six groups of the computer literacy course with three different instructors. Participants in six groups were examined by CAS and computer skill assessment at each time point.

4.2 Instrumentation

Demographic information of participants were taken in the first section of the questionnaire. The second section, Computer Attitude Scale (CAS) was used to measure attitudes towards computers acquired by Loyd and Gressard (1984). CAS is an instrument measuring four aspects, each of which depicts one subscale of the CAS: (i) Computer Anxiety subscale, (ii) Computer Confidence subscale, (iii) Computer Liking subscale and (iv) Computer Usefulness. Score value of each subscale consists of 10 questions with choices measured on a 5 point Likert Scale (strongly agree, agree, neutral, disagree and strongly disagree). Thus, subscore values can range from a low of 10 to a high of 50. Similarly, total score of attitude can range from a low of 50 to a high of 200. The higher the score indicates a more positive attitude towards computer studies. Loyd and Gressard (1985) reported high reliability (Cronbach's alpha) on the total score (.90). High reliability (.95) and stable factorial validity was reported by Christensen and Knezek [19]. Nash & Moroz [20] also yielded similar high internal consistency scores.

The third section is Perceived Computer Skills scale (PCSS) which was adopted from the study carried out by Abdul Malek (1999) and Tengku Ariffin (2005) [21]. Perceived computer skills can be defined as students' beliefs or perceptions about to what extent they can use a computer skillfully. Participants have to assess themselves with respect to general computer literacies like writing documents, scanning documents, sending messages, printing documents etc. PCSS is a five point Likert scale ('Not well at all' to 'very well') consisting of 13 items. Score value in PCSS can range from a low of 13 to a high of 65.

4.3 Statistical Analysis

Subscore value of each subscale of CAS and total score were analyzed at the beginning and end of the course. To measure the overall effect of the course on students' attitudes and skills, Paired sample t-test was used to compare the subscale score and total score at the beginning and end of the class. Results were formulated using the Statistical Packages (SPSS IBM, version 21). The level of significance (alpha level) was set at .05.

5. RESULTS AND FINDINGS

Results are computed with the help of Paired sample t-test using SPSS software. Tables and figures are developed to have the clear understanding of the results.

5.1 Effect of the introductory course on attitude towards Computers

Attitudes towards computers were compared with respect to four aspects of CAS from the beginning to the end of the course. Comparing the total score of CAS, we see an overall significant increase ($t(171) = -27.797, P = .000$) [see Table 2].

Table 1 & 2 reveal that there was a significant increase in computer anxiety and confidence with maximum mean difference from the beginning to the end of the course. However, there was a significant increase in computer usefulness but with less mean difference. Students realized the importance and usefulness of computer study before the course also, but students became more confident and optimistic towards computers by the end of the course. Figure 1 depicts the Bar Graph of CAS total mean score at the beginning and at the end of the introductory computer course.

Table 1: Paired Sample Statistics

Subscale	Course point	Mean	S.D
Computer anxiety	Beginning	29.12	5.44
	End	39.26	4.21
Computer confidence	Beginning	28.47	4.38
	End	39.35	4.02
Computer liking	Beginning	34.16	4.20
	End	41.65	4.28
Computer usefulness	Beginning	36.31	4.70
	End	42.28	4.82
CAS total Score	Beginning	128.05	12.07
	End	162.53	12.81

Table 2: Significant increase- t-test comparing attitude from the beginning to the end of the course

Subscale	Compares course effect	t	df	Sig. (2 tailed)	Mean difference
Computer anxiety	Beginning-End	-26.697	171	.000	-10.13
Computer confidence	Beginning-End	-23.025	171	.000	-10.88
Computer liking	Beginning-End	-20.208	171	.000	-7.49
Computer usefulness	Beginning-End	-17.653	171	.000	-5.97

Total Score	Beginning-End	-27.797	171	.000	-34.48
-------------	---------------	---------	-----	------	--------

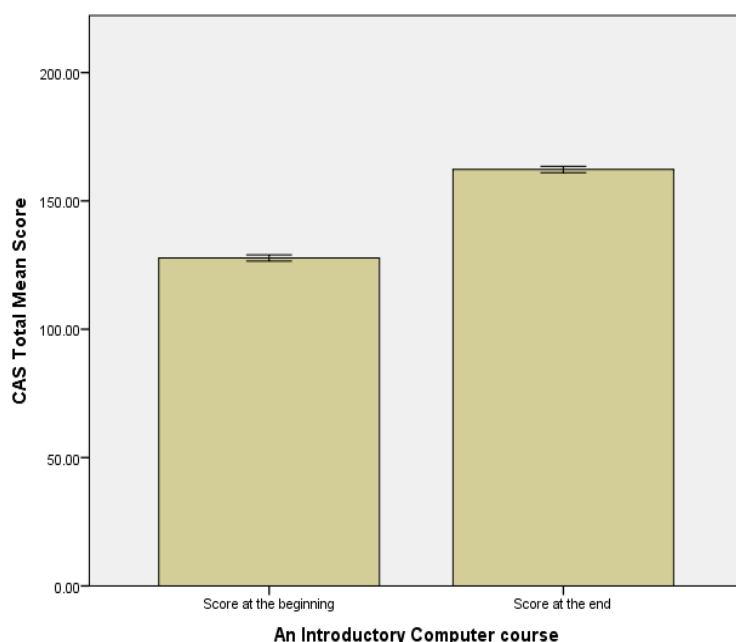


Figure 1

5.2 Effect of the introductory course on Performance

Performance was compared with the help of PCSS at the beginning and end of the course. A paired sample t-test was conducted to evaluate whether a statistically significant difference existed between the PCSS scores before and after the course. Assumption testing indicated no gross violation of assumptions. The results of the paired sample t-test were significant, $t(171) = -28.358$, $P = .000$ [see Table 4], indicating that there is a significant increase in PCSS scores from the beginning (Mean = 55.67, S.D = 6.07) to the end (Mean = 55.67, S.D = 5.04) [see Table 3]. . Figure 2 depicts the Bar Graph of Computer skills mean score at the beginning and at the end of the introductory computer course.

Table 3: Paired Sample Statistics

PCSS	Course point	Mean	S.D
Score	Beginning	44.44	6.07
	End	55.67	5.04

Table 4: Paired Sample t-test

PCSS score	t	df	Sig. (2 tailed)	Mean difference
Beginning-End	-28.358	171	.000	-11.24

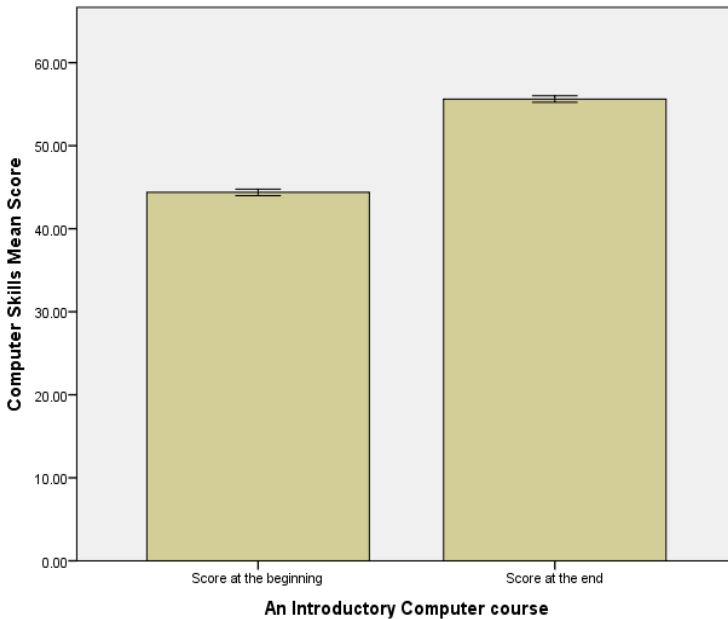


Figure 2

6. DISCUSSION AND CONCLUSION

In order to prepare the students to face the challenges of the modern world, Qassim University introduced the computer course in PYP (Preparatory year program). PYP is a yearly program where the students study all basic subjects including Computer Science. The course includes Computer Basics, MS Office Windows' and Java programing. The objective of the introductory computer course in PYP is to introduce students to the basic computer concepts and programming skills so as to provide a base for further learning and taking computer as a major subject at college. In other words, students are introduced to a new subject which will encourage them to enhance their academic progress. An additional objective is to investigate into the effectiveness of the course on the attitudes and skills of the students towards computer course.

The course seems to be successful in creating a positive attitude towards computer study and also in developing computer skills in our students. Thus, students' positive attitude increased throughout the study and revealed that the course is very effective. Generally, the results showed that students exhibited positive responses in all the four aspects of computer attitudes, which are: anxiety, confidence, liking, and computer usefulness. The students had a moderate level of confidence but a high level of perception toward computer usefulness and liking at the beginning of the course. This revealed that students have positive awareness of the importance of computer studies and this awareness continued to increase more so by the end of the course.

Rozell & Gardner, (1999) [22] showed that experience and familiarity might improve people's perceptions about their computer skills and consequently improve their attitudes towards computer. Similarly, results have been shown by previous studies by Gao (2005) [23], Garland & Noyes (2004) [24], Teo (2006) [25] that experience and perceived usefulness have a strong correlation with attitude. Also, Abdul Malek (1999) revealed in his study that computer knowledge, interest in computer technologies, and attitudes toward computers are some of the variables that are related to computer skills. Accordingly, results of the present study proved that familiarity with the course improved the computer skills and attitudes of the female students at Qassim University, Saudi Arabia. However, female students do not often take computer science as a major subject after they complete PYP. In addition to providing

computer literacy, this one-year computer course is also used for recruiting students into the CS major after PYP.

One of the major reasons for not showing an enthusiastic attitude towards computer may be the lack of career opportunities for Saudi women in Saudi Arabia or due to the cultural restrictions. However, the Saudi Government has made a considerable effort to promote the gender inequality and to ensure women's equal access to education. Even then, the fields of education, training and jobs for women are limited as the specializations available to them do not match with the needs of the labor market. Another reason of the decline in enrollment in CS major may be the portion of syllabus of the Java programming part of the course which students study in the 2nd semester at PYP. Also, students find programming too hard and uninteresting. Generally, students use computers just for recreational-type of activities like gaming and chatting on the Internet. Instead, purposeful searching of the education websites should be encouraged and activities which lead to the learning of computer skills like spreadsheet and programming must be emphasized.

The third reason tends to be the lack of female role models in the computer field in Saudi Arabia. McGrath & Thurston (1992) [26] showed that one of the factors contributing to the gender gaps in computer skills is the lack of female role models in the computer world. Parents should play an important role in encouraging female children to gain experience in using computers and take CS as major.

Finally, it is concluded that learning computer concepts in an introductory course contribute significantly to students' attitude toward computers. Hence, a continuous effort has to be taken to develop the confidence of the students in the use and potential of computers.

7. FUTURE WORK

Future studies could focus on the attitudes of male students towards computers at Qassim University, Saudi Arabia. Another possibility is to study at the programming skills of the students and investigate strategies after maintaining or increasing them. Results of previous studies have not been consistent with regard to the relationship of gender and attitudes towards computers and computer skills. In view of gender segregation in the education system in Saudi Arabia, future research can be done on gender differences in computer attitudes and skills.

REFERENCES

1. Bureau of Labor Statistics (2004), The 10 fastest growing occupations, 2002-12 [online] Available: <http://www.bls.gov/news.release/ecopro.t04.htm>
2. Computer Research Association (2004), 2002-2003 Taulbee Survey [online] Available: <http://www.cra.org/CRN/articles/may04/taulbee.html>
3. Hensel, M., (1998). The Approaching Crisis in Computing Education: Enrollment, Technology, Curricula, Standards and their Impact on Educational Institutions. *Journal of Information Systems Education*, 24-27.
4. Hoekstra, K. (2004), Getting a job in the game development industry [online] Available: <http://www2.ravensoft.com/getajob.htm>
5. Loyd, B. H., & Gressard, C. (1984). Reliability and factorial validity of computer attitude scale. *Educational and Psychological Measurement*, 44(2), 501-505.
6. Koohang, A. A. (1989). A study of attitudes toward computers: Anxiety, confidence, liking, and perception of usefulness. *Journal of Research on Computing in Education*, Winter 1989, 137-150.
7. Divine, R. L., & Wilson, J. H. (1997). Antecedents of student attitudes towards computers. *Journal of marketing Education*, 19(2), 54-66.
8. Nafisah Mahmud. (1997). Knowledge and attitudes of academic staff towards the use of computers. Unpublished Mster thesis, Universiti Putra Malaysia, Serdang, Kuala Lumpur.
9. Abdul Malek Abdul Karim. (1999). Computer Technologies at Universiti Utara Malaysia (UUM): Faculty Use, Knowledge, Skills, Interests, and Attitudes. (Doctoral dissertation, University of Virginia, 1999). *Dissertation Abstracts International* A60 (1): 104.
10. Hong, K. S., Ridzuan, A. A., & Kuek, M. K. (2003). Students' attitudes toward the use of the Internet for learning: A study at a university in Malaysia. *Educational Technology & Society*, 6(2), 45-49

11. Shaft, T., Sharfman, M. & Wu, W. (2004). Reliability assessment of the attitude towards computers instrument (ATCI). *Computers in Human Behavior*, 20, 661–689.
12. DeYoung, C. G., & Spence, I. (2004). Profiling information technology users: en route to dynamic personalization. *Computers in Human Behavior*, 20, 55–65.
13. Ray, C. M., Sormunen, C., & Harris, T. M. (1999). Men's and Women's Attitudes toward Computer Technology: A Comparison. *Office Systems Research Journal*, 17(1), 1-8.
14. Saade, R. G., & Galloway, I. (2005). Understanding Intention to Use Multimedia Information Systems for Learning. *Issues in Informing Science and Information Technology*, 287-295.
15. Aiken, L. R. (1996). Rating scales and checklists: Evaluating behavior, personality, and attitudes. Canada: John Wiley & Sons.
16. Dusick, D. M. (1998). What social cognitive factors influence faculty members' use of computers for teaching? A literature review. *Journal of Research on Computing in Education*, 31(2), 123-137.
17. Dalton, D. W. & Goodrum, D. A. (1991). The effects of computer programming on problem solving skills and attitudes. *Journal of Educational Computing Research*, 7(4), 483-506.
18. Farkas, D. J. (2004). The effect of the instructional sequence of spreadsheets and programming on performance, computer anxiety, and attitude toward computers, Ann Arbor, MI: UMI
19. Christensen, R. & Knezek, G. (1996). Constructing the teachers' attitudes toward computers (TAC) Questionnaire. Paper presented at the annual meeting of the Southwest Educational Research Association, New Orleans, LA.
20. Nash, J. B. & Moroz, P. (1997). Computer Attitudes among Professional Educators: The Role of Gender and Experience. Annual meeting of the Southwest Educational Research Association, Austin, TX, January 23-25.
21. Ariffin, T. (2005): Gender Differences in computer attitudes and skills. *Jurnal Pendidikan* 30: 75 – 91
22. Rozell, E.J., & Gardner, W.L. (1999). Computer-related success and failure: a longitudinal field study of the factors influencing computer-related performance. *Computers in Human Behavior*, 15(1), 1-10.
23. Gao, Y. (2005). Applying the Technology Acceptance Model to Educational Hypermedia: A Field Study. *Journal of Educational Multimedia and Hypermedia*. 14 (3), 237-247.
24. Garland, K. J., & Noyes, J. M. (2005). Computer experience: a poor predictor of computer attitudes. *Computer in Human Behavior*, 20(60), 823-840.
25. Teo, T. (2006). Attitude toward computers: a study of post-secondary students in Singapore. *Interactive Learning Environments*, 14(1), 17-24.
26. McGrath, D., & Thurston, L. P. (1992). Sex differences in computer attitudes and beliefs among rural middle school children after a teacher training intervention. *Journal of Research on Computing in Education* 24(3): 468-490.
27. Kay, R. H. (1993). An exploration of theoretical and practical foundations for assessing attitudes towards computers: The computer attitude measure (CAM), *Computers in Human Behavior*, 9, 371-386.
28. Loyd, B. H. & Gressard, C. (1985). The Reliability and Validity of an Instrument for the Assessment of Computer Attitudes. *Educational and Psychological Measurement*, 45(4), 903-908.
29. Loyd, B. H., & Loyd, D. E. (1985). The reliability and validity of an instrument for the assessment of computer attitudes. *Educational and Psychological Measurement*, 45, 903-908.
30. Yuen, A. H. K. & Ma, W. K. (2001). Teachers' Computer Attitudes: Factors influencing the Instructional Use of Computers. *Proceedings of the International Conference on Computers in Education*, November 2001, Korea, 7p.
31. Woodrow, J. E. J. (1992). The influence of programming training on the computer literacy and attitudes of pre-service teachers. *Journal of Research on Computing in Education*, 25 (2), 200-219.
32. Topkaya, Z.E. (2010). Pre-Service English language teachers' perceptions of computer self-efficacy and general self-efficacy. *Turkish online journal of Educational Technology*, 9(1): 443-456.
33. Celik, H.C. (2015). Effects of Computer course on Computer self-efficacy, computer attitudes and achievements of young individuals' in Skiit, Turkey. *Educational Research and Reviews*, 10(3), 249-258.
34. Tatnall, A. (2014). ICT, education and other people in Australia: a socio technical analysis. *Education and Information Technologies*, 19(3), 549-564.
35. Gonzalez, A., Ramirez, M. P. & Viadel V. (2015). ICT learning by older adults and their attitudes towards Computer use. *Current Gerontology and Geriatrics Research*, Volume 2015, 7 pages.

308

309 **Appendix 1: CSC105 Syllabus**

310 **CSC105 Syllabus breakdown**

311 *Textbook ICDL 5.0 Course, Cheltenham Courseware Pty. Ltd. 2010.*

312	Week#	Section	Topic
313	Week 01	1.1	Hardware
314		1.2	Software
315		1.3	Computer Performance
316	Week 02	1.4 & 1.5	Memory &Data Storage
317		1.6	Input and Output Devices
318		1.7 & 1.8	Networks & Data Transfer Terminology
319	Week 03	1.9	The Internet
320		2.1 & 2.2	A first look at Windows 7 & The Windows 7 Desktop
321		2.3 & 2.4	Applications & Windows Explorer
322	Week 04	2.5 & 2.6	Manipulating folders & Manipulating files
323	Week 05	2.7 & 2.8	Compressing files & Printing Issues
324		3.1 & 3.2	The Microsoft word 2010 screen &
325			Starting to use Microsoft Word 2010
326	Week.06	3.10 & 3.11	Tables and using Graphics within Microsoft Word
327		3.12	Printing Word Document
328		4.1 & 4.2	Using Excel & Selection techniques
329	Week 07	4.3	Manipulating Rows and Columns
330		4.4 & 4.5	AutoFill & Worksheets
331		4.6 & 4.7	Alignment Formatting & Number Formatting
332	Week 08	4.8 & 4.9	Freezing row and column title & Formulas
333		4.10	Functions
334		4.11	Charts
335	Week 09	4.12	Printing Issues
336		5.1 & 5.2	Using PowerPoint & Creating a Presentation
337		5.3, 5.4 & 5.5	Manipulating Slides, Themes, Text Boxes
338	Week 10	5.6 & 5.7	Graphics &Manipulating Graphics
339		5.8	Organization Charts
340		5.9 & 5.10	Slides Shows & Printing
341	Week 11	6.1	Database Concepts
342		6.2	Tables, Fields and Field Types
343		6.3	Field Properties
344	Week 12	6.4 & 6.5	Manipulating Tables and Records & Primary Keys
345		6.6 & 6.7	Filtering &Sorting
346		6.8	Relationships

347	Week 13	6.9	Forms
348		6.10	Queries
349		6.11	Reports

350 **Appendix 2: CSC111 Syllabus**

351 **CSC111 Syllabus breakdown**

352 *Textbook: Rogers Cadenhead, Sams Teach Yourself Java in 24 Hours, Sams Publishing (6th edition),*
 353 *2012.*

354	Week#	Chapter	Topic
355			(including Q & A, Workshops and Activities)
356	Week 01	1	Becoming a Programmer
357		2	Writing Your First Program
358	Week 02	3	Understanding How Java Programs Work
359	Week 03	4	Storing and Changing Information in a Program (I)
360	Week 04	4	Storing and Changing Information in a Program (II)
361	Week 05	4	Storing and Changing Information in a Program (III)
362	Week 06	5	Accepting Input from User
363	Week 07	6	Using Strings to Communicate (I)
364	Week 08	6	Using Strings to Communicate (II)
365	Week 09	7	Using Conditional Tests to Make Decisions (I)
366	Week 10	7	Using Conditional Tests to Make Decisions (II)
367	Week 11	8	Repeating an Action with Loops (I)
368	Week 12	8	Repeating an Action with Loops (II)
369	Week 13	9	Storing Information with Arrays (I)
370	Week 14	9	Storing Information with Arrays (II)

371

372 **Appendix 3: Loyd & Gressard Computer Attitude Scale (CAS)**

373 Below are a series of statements. There are no correct answers to these statements. They are designed
 374 to permit you to indicate the extent to which you agree or disagree with the ideas expressed. Circle the
 375 best describes how you feel about that statement

- 376 1=Strongly Disagree (SD)
 377 2=Disagree (D)
 378 3=Undecided (U)
 379 4=Agree (A)
 380 5=Strongly Agree (SA)

381 SD D U A SA

382

383	1. Computers do not scare me at all.	1	2	3	4	5
384						
385	2. I am no good with computers.	1	2	3	4	5
386						
387	3. I would like working with computers.	1	2	3	4	5
388						
389	4. I will use computers many ways in my life.	1	2	3	4	5
390						
391	5. Working with a computer would make me	1	2	3	4	5
392	very nervous.					
393						
394	6. Generally, I would feel OK about trying a	1	2	3	4	5
395	new problem on computer.					
396						
397	7. The challenge of solving problems with computers	1	2	3	4	5
398	does not appeal to me.					
399						
400	8. Learning about computers is a waste of time.	1	2	3	4	5
401						
402	9. I do not feel threatened when others talk	1	2	3	4	5
403	about computers.					
404						
405	10. I do not think I would do advanced computer work.	1	2	3	4	5
406						
407	11. I think working with computers would be enjoyable	1	2	3	4	5
408	and stimulating.					
409						
410	12. Learning about computers is worthwhile.	1	2	3	4	5
411						
412	13. I feel aggressive and hostile toward computers.	1	2	3	4	5
413						
414	14. I am sure I could do work with computers.	1	2	3	4	5
415						
416	15. Figuring out computer problems does not appeal	1	2	3	4	5
417	to me.					
418						
419	16. I will need a firm mastery of computers for my future	1	2	3	4	5
420	work.					
421						
422	17. It would not bother me at all to take computer	1	2	3	4	5
423	Courses.					
424						
425	18. I am not the type to do well with computers.	1	2	3	4	5
426						
427	19. When there is a problem with a computer run	1	2	3	4	5
428	that I can't immediately solve, I would stick with					
429	it until I have the answer					
430						
431	20. I expect to have little use for computers in my	1	2	3	4	5
432	daily life.					
433						
434	21. Computers make me feel uncomfortable.	1	2	3	4	5

435						
436	22. I am sure I could learn a computer language.	1	2	3	4	5
437						
438	23. I do not understand how some people can spend	1	2	3	4	5
439	so much time working with computers and seem					
440	to enjoy it.					
441	24. I cannot think of any way that I will use computers in	1	2	3	4	5
442	my career.					
443						
444	25. I would feel at ease in a computer class.	1	2	3	4	5
445						
446	26. I think using a computer would be very hard	1	2	3	4	5
447	for me.					
448						
449	27. Once I start to work with the computer,	1	2	3	4	5
450	I would find it hard to stop.					
451						
452	28. Knowing how to work with computers will	1	2	3	4	5
453	increase my job possibilities.					
454						
455	29. I get a sinking feeling when I think of trying	1	2	3	4	5
456	to use a computer.					
457	30. I could get good grades in computer courses.	1	2	3	4	5
458						
459	31. I will do as little work with computers as possible.	1	2	3	4	5
460						
461	32. Anything that a computer can be used for, I can	1	2	3	4	5
462	do just as well some other way.					
463						
464	33. I would feel comfortable working with a	1	2	3	4	5
465	computer.					
466						
467	34. I do not think I could handle a computer course.	1	2	3	4	5
468						
469	35. If a problem is left unsolved in a computer	1	2	3	4	5
470	class, I would continue to think about it					
471	afterward.					
472						
473	36. It is important to me to do well in computer	1	2	3	4	5
474	classes.					
475						
476	37. Computers make me feel uneasy and confused.	1	2	3	4	5
477						
478	38. I have a lot of self-confidence when it comes to	1	2	3	4	5
479	working with computers.					
480						
481	39. I do not enjoy talking with others about	1	2	3	4	5
482	computers.					
483	40. Working with computers will not be important	1	2	3	4	5
484	to me in my life's work.					

485 **Appendix 4: Computer Skills Scale**

486 1=Not Well At All (NWAA)
 487 2=Not Very Well (NVW)
 488 3=Slightly Well (SW)
 489 4=Well (W)
 490 5=Very Well (VW)

491	Computer Skills Scale	NWAA	NVW	SW	W	VW
492	1. Write documents	1	2	3	4	5
493	(Reports,articles,letters,etc)					
494						
495	2. Prepare spreadsheets(grades,budget,etc)	1	2	3	4	5
496						
497	3. Scan documents or images	1	2	3	4	5
498						
499	4. Edited images	1	2	3	4	5
500						
501	5. Prepare slides for presentation	1	2	3	4	5
502						
503	6. Send messages via electronic mail	1	2	3	4	5
504						
505	7. Create web pages	1	2	3	4	5
506						
507	8. Upload documents on the World Wide Web	1	2	3	4	5
508						
509	9. Search for the information on the web	1	2	3	4	5
510						
511	10. Use software for computer assisted learning	1	2	3	4	5
512						
513	11. Print document	1	2	3	4	5
514						
515	12. Create database	1	2	3	4	5
516						
517	13. Write computer programs	1	2	3	4	5