ICT-ASSISTED CAREER GUIDANCE: A CASE STUDY IN A PUBLIC SCHOOLS IN BEIRUT, LEBANON

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ABSTRACT: *This study investigated the impact of using ICT in delivering a career guidance program in one public high school in Beirut, Lebanon. The sample consisted of Grade 11 students (N=106) from all sections of this grade level. Students at this school often received the same career guidance program consisting of 14 hours during their tenth grade and then their eleventh grade. The ICT-assisted career guidance intervention program was conducted after students covered 6 hours of their regular career guidance program during their eleventh grade and it extended over 6 hours itself. Pre- and post-tests were administered to students and data was analyzed using SPSS 21.0 for windows. An independent sample t-test was carried to compare the means showing significant impact of the ICT-assisted intervention program on students. Limitations and recommendations are provided at the end of the study.*

KEYWORDS: Career Guidance, ICT, Counseling, Counselor, School Improvement

INTRODUCTION

Information and communication technology (ICT) has invaded our lives and spurred dramatic changes to almost all aspects of the society, including education (Shal, 2016). It has been considered as a tool that safeguards opportunities of life-long learning (Clark, 2012; Gahmrawi & Shal, 2012; Mingle & Adams, 2015; Shal, 2016). ICT has also been recognized as possessing the potential to expand access to career guidance (Council of the European Union, 2008), through: (1) facilitating interaction between students and professionals (Bimrose & Barnes, 2010; Hooley, Hutchinson & Watts, 2010; Sampson, 2008; Offer & Chiru, 2006; Vuorinen, 2006; Harris-Bowlsbey & Sampson, 2005); (2) providing programs that introduce careers and the corresponding life styles (Barnes, La Gro & Watts, 2010; Vuorinen, 2006); and 3) through serving as a powerful agent of change that illustrates the transversal elements of education, employment and social policies (ELGPN, 2010).

That is, ICT-based career guidance offers resources and services that support informed and careful occupational, educational, training and employment decision-making (Bimrose & Barnes, 2010; Hooley, Hutchinson & Watts, 2010; Sampson, 2008). It provides means for expounding self-images pertaining to values, interests, skills, aptitudes and employment preferences (Bimrose & Barnes, 2010; Hooley, Hutchinson & Watts, 2010; Sampson, Shy, Offer & Dozier, 2010).

Within the Lebanese educational context, career guidance and counseling for students is of relatively low quality when it exists (UNESCO, 2015). Students are often confronted with changing majors three times, on the average, before they finally choose a major that they could discover later on that it was not a good choice in relation to the job market (Ayyash-

Abdo, Alameddine & Mukallid, 2010; Ayyash-Abdo, Bahous, & Nabhani, 2009; Ayyash-Abdo, 2005).

Research has shown that school counseling in Lebanese schools is confronted with lots of stressors such as: (a) lack of cooperation from school administration and from parents; (b) unavailability of private rooms for counseling; (c) viewing counseling as additional workload; (d) the stigma of seeing a counselor among peers and other teachers; (e) regarding counselors as disciplinarians; (f) reluctance of students to disclose to a stranger, a cultural attitude to some degree; (g) counselors' need of further training; and (h) not believing that counseling is worthwhile (Ayyash-Abdo, Alameddine & Mukallid, 2010, p.15). This study has also noted that impediments confronting career guidance and counseling in private schools are relatively less augmented than the case of public schools.

The previous barriers seem to be quite primitive for an educational system, as they address basics for the development and nourishment of any career counseling program. Despite this fact, the Lebanese National e-Strategy has recommended utilizing ICT tools in educating students about future majors and careers (UNDP, 2003). In this line, this study attempted to investigate the impact of utilizing information and communications technology (ICT) in fostering effective career guidance programs as opposed to regular programs offered by public schools.

Statement of the Problem

The literature indicates that ICT can serve as strong tools for promoting effective career guidance programs (Kettumen, Vuorinen and Sampson, 2013; Sampson and Osborn, 2013). The Lebanese National e-Strategy has recommended the utilization of such tools in guiding and counseling students in Lebanese schools regarding future career. This study aimed at examining the impact of using ICT as a tool for the promotion of an effective career guidance program for Grade 10 students in a public school in Lebanon.

Research Questions and Hypotheses

This study was guided by the following research question:

What impact does ICT-assisted career guidance program have on students?

The hypotheses developed were:

H_o: The ICT-assisted career guidance intervention program impacted students more positively than the ICT-free regular career guidance program.

H_o: The ICT-assisted career guidance intervention program impacted students equally or less than the ICT-free regular career guidance program.

CONCEPTUAL FRAMEWORK

Purposes of Career Guidance Programs

UNESCO (1998, cited in UNESCO 2015) suggest that the main purposes of career guidance include: (1) helping students gain greater self-awareness in area such as interest, value, abilities and personality style; (2) directing students to resources that can help them become more knowledgeable about job and occupations; (3) engaging students in decision making process; and (4) assisting them to be active leaders of their career path. Thus career guidance plays the dual role of helping labor markets work and education systems meeting their goals.

OECD (2014) suggest an even more crucial role for school guidance programs: (1) they secure lifelong learning opportunities for individuals; and (2) they lead to active labor market policies. That is to say, on one hand; career guidance programs provide services that help in the development of career management skills, rather than only helping students make immediate decisions; and greatly widen students' access to career guidance, extending access throughout the lifespan (Kettunen, 2014). On the other hand, labor economists and labor market policy makers suggest that effective career guidance programs can help improve labor market efficiency. This is achieved by securing allocative efficiency as a result of a better match between individual talents and qualifications on the one hand and the skills and qualifications demanded by employers on the other (Kettunen et al., 2014).

ICT and Career Guidance

Information and communication technology (ICT) has become a key element in career services (Kettunen et al., 2013). Currently, ICT applications that serve career guidance purposes range from information files to sophisticated computer-assisted career guidance systems that facilitate interaction among practitioners and individuals (Barnes, La Gro, & Watts, 2010).

The increasing use of ICT in career-related activities is placing new demands on career practitioners and schools (Bimrose & Barnes, 2010; Osborn, Dikel, & Sampson, 2011). Emerging technologies provides new opportunities which were not possible in the past for practitioners to serve individuals (Barnes & Watts, 2009). Yet, a key challenge is to ensure that the career guidance providers are equipped and continuously trained to respond to these new demands (Clarke, 2009).

The role of information and communication technology in career services can be seen in three ways; as a tool, as an alternative, or as an agent of change (Watts, 2002). In this line, career practitioners have generally used technology in one of the three ways: to deliver information, to provide automated interaction and to provide channel for communication (Hooley, Hutchinson, & Watts, 2010). Barnes, La Gro, & Watts (2010) suggested that ICT be used for the following four functions: informing, experiencing, constructing and communicating. Likewise, Osborn, Dikel & Sampson's (2011) model emphasize three functions: understanding, acting and coping.

Skills and Competencies Needed

Considerable body of research has been conducted on identifying the skills and competencies required for using ICT in career services (e.g. Barnes & Watts, 2009; Bimrose, Barnes, & Atwell, 2010; Cogoi, 2005; Cedefop, 2009; Pyle 2000). For example, Pyle (2000) identifies

the following as basic skills for counselors who would be eligible to use ICT for career guidance and orientation: (1) knowledge of computer-assisted software and Web sites; (2) capability to diagnose student needs; (3) capability to motivate students; (4) ability to help students process data; and (5) ability to help the students create and implement an action plan.

Barnes, La Gro & Watts (2010) go a step further by distinguishing two broad categories of ICT-related competencies for guidance practitioners:

(1) Use ICT to deliver guidance to meet students' information needs: (a) to meet students' experiential learning needs; (b) to meet students' constructivist learning needs; and (3) to meets students' communication needs

(2) Develop and manage the use of ICT in guidance by: (a) developing the use of ICT-related guidance solutions; and (b) managing the use of ICT-related guidance solutions in a service context.

Kettunen et al. (2013) suggest that successful integration of ICT in career services is not only dependent on the skills or technical facilities available, but also on teachers' willingness to accept the changes that new technology may bring to service delivery.

METHODOLOGY

The Sample

This study encompassed a case study that involved one public school in Beirut, Lebanon. All Grade 11 students from all the three sections available at this school (N= 106) comprised the sample. The selection of this school was made based on the willingness of its principal in taking part in the study. In fact, one of the researcher was involved in training a sample of Public school principals from Beirut (11 principals) and Mount Lebanon (12 principals). She proposed her idea of conducting a case study in a Public school where she and her colleagues would examine the impact of using ICT tools in carrying out career guidance for eleventh graders. Only one school principal showed great interest in the study. As such this school was selected for the purpose of the study.

The Research Instrument

This study researched ICT-assisted career guidance in one public schools. The case study utilized a research instrument that consisted of a pre- and post-tests that consisted each of 11 items. The pre-test was carried out prior to the administration of the ICT-assisted career guidance program which was conducted over the course of 4 weeks. The post-test was carried immediately after the termination of the ICT-assisted career guidance program. Each test consisted of 10 items measured over 4 point Likert scale statements corresponding to four performance areas which are: "Strongly Disagree", "Disagree", "Agree" and "Strongly Agree". A score of 1 indicates the student strongly disagrees on that element; a score of 2 indicates that the student disagrees on that element; a score of 3 entails that the student agrees on that element; and a score of 4 indicates that the student strongly agrees on that element.

Being eleventh graders, the school has been offering them with career guidance since Grade 10. Besides, they were exposed to career guidance over three months prior to the intervention program. The total number of hours prior to the intervention program were 6 during Grade 11 and 14 during Grade 10. The same program is repeated over the course of Grades 10 and 11 as per the school principal. The ICT-assisted career guidance intervention program was carried over the course of 6 hours and it consisted of the same material aimed at by school; yet the researchers secured the material digitally through the free website: http://www.orientation94.org

Ethical Considerations

Data were collected from students after gaining parents' signature on the form inviting their children to participate in the study. The participants' inform consent to willingly partake in the study was also sought from students themselves. No objection was noted neither from parents, nor students.

Data Collection Procedure

Students completed the pre-test in the presence of the researcher prior to the inception of the ICT-assisted intervention program. It took 10 minutes to be completed by students. The career guidance program was delivered by the same teacher responsible for this task in the participating school. She was not given any training by the researcher, but rather orientation as to the content of the website. She was asked to send via email, within a week from the orientation meeting, the material she has selected from the website to use such that this material matched what she was supposed to deliver to students in the first place. One researcher attended the 6 sessions as a non-participant observer for the purpose of making sure that the agreed-on material was utilized with no additions or subtractions. By the end of the intervention program, the post-test was completed by students in the presence of one researcher. It also took around 10 minutes to be completed.

Data Analysis Method

Data was analyzed using SPSS 21.0 for windows. Descriptive statistics were used to describe and summarize the properties of the mass of data collected from the respondents. Means scores, standard deviations and percentages were calculated per each item of the survey instrument.

RESULTS

Demographic Data

The sample consisted of (N=106) Grade 11 students. 59.61% were females as opposed to 49.39% who were males. The average age of participant students was 16.5 years.

Pre-Test Data

Descriptive Statistics obtained from students' pre-intervention questionnaires are reported in Table 1.

Table 1: Pre-Test Descriptive Statistics

	Item	SA	A	D	SD	Std. Dev.
1	Through the career guidance program I have gained deep understanding about my personal interests	1	34	42	29	0.796
		0.9%	32.1%	39.6%	27.4%	
		33%		67%		
2	Through the career guidance program I have gained deep understanding about my personal potentials	2	30	47	27	0.784
		1.9%	28.3%	44.3%	25.5%	
		30.2%		69.8%		
3	Through the career guidance program I have gained deep understanding about my favorite personal work environment	2	22	56	26	0.730
		1.9%	20.8%	52.8%	24.5%	
		22.7%		77.3%		
4	Through the career guidance program I have gained deep understanding the work environments that I cannot tolerate	2	19	64	21	0.676
		1.9%	17.9%	60.4%	19.8%	
		19.8%		80.2%		
5	I have good understanding of professions that I am interested in	9	4	80	13	0.705
		8.5%	3.8%	75.5%	12.3%	
		12.3%		87.8%		
6	I believe that career guidance at school has equipped me with skills I need to make informed decisions about my future career	1	6	41	58	0.650
		0.9%	5.7%	38.7%	54.7%	
		6.6%		93.4%		
7	I have made up my mind regarding my future career	2	5	85	14	0.505
		1.9%	4.7%	80.2%	13.2%	
		6.6%		93.4%		
8	I keep changing my opinion regarding future career	58	41	7	0	0.621
		54.7%	38.7%	6.6%	0%	
		93.4%		6.6%		
9	In making up my mind about future career, I think about labor market	1	8	33	64	0.680
		0.9%	7.5%	31.1%	60.4%	
		8.4%		91.5%		
10	Parents and friends are more reliable career advisors than school career guidance program	35	55	12	4	0.761
		33%	51.9%	11.3%	3.8%	
		84.9%		15.1%		
11	The score I give for school's regular career guidance program (out of 5 points)	2.59/5 = 51.8/100				0.870

Pre-test data shows that students overall evaluation of their career guidance program is minimally acceptable with a grand score of 51.8%. The majority of students reported that they were not sure yet of their future career path (93.4%). They anticipated that the career guidance program did not equip them with the skills they needed in order to make informed decisions about their future careers (93.4%); and that the program did not support them in linking their decisions to labor market (91.5%). 93.4% confirmed that they keep on changing their future career choices, and 84.9% believed that parents and friends were the most reliable sources for making decisions about future career. Students believed that they lacked effective knowledge about their personal interests (67%) and potentials (69.8%) ; the work environments that they would function effectively in (77.3%); and the work environments

they would function least in (80.2%). Finally, 87.8% of students suggested that they lacked the deep understanding of how professions function in real-life contexts.

The Intervention Program

As mentioned earlier, the school offers its students a 14 hour career guidance program during their Grade 10. The same identical program is repeated for them in Grade 11. The content of the intervention program was selected in collaboration with the school principal and the teacher concerned with the delivery of the career guidance program at school. The aim was to select the exact content that was supposed to be covered during the next 6 sessions, however, utilizing ICT. The free website: http://www.orientation94.org was utilized. The intervention program was carried over the course of 6 sessions. No training was offered to the teacher as to how utilize the website and was left for her to avoid bias. Table 2 represents the content delivered to students during those sessions.

Table 2: Content of Intervention Program

Session	Content	Web Links
1	Learning & Life Skills	http://www.orientation94.org/essaydetails.php?eid=128&cid=170
2		
3	Professional Personalities	http://www.orientation94.org/essaydetails.php?eid=125&cid=33
4		
5	What does it take to be a professional in this career?	http://www.orientation94.org/catessays.php?cid=274#
6		

Post-Test Data

Descriptive Statistics obtained from students' pre-intervention questionnaires are reported in Table 3.

Table 3: Post-Test Descriptive Statistics

	Item	SA	A	D	SD	Std. Dev.
1	Through the ICT career guidance program I have gained deep understanding about my personal interests	0	72	20	14	0.719
		0%	67.9%	18.9%	13.2%	
		67.9%		32.1%		
2	Through the ICT career guidance program I have gained deep understanding about my personal potentials	14	44	30	18	0.928
		13.2%	41.5%	28.3%	17%	
		54.7%		45.3%		
3	Through the ICT career guidance program I have gained deep understanding about my favorite personal work environment	7	38	39	22	0.870
		6.6%	35.8%	36.8%	20.8%	
		42.4%		57.6%		
4	Through the ICT career guidance program I have gained deep understanding the work environments that I cannot tolerate	23	31	36	16	0.995
		21.7%	29.2%	34%	15.1%	
		50.9%		49.1%		

5	Through the ICT career guidance program I have gained I have gained good understanding of professions that I am interested in	39	52	11	4	0.770
		36.8%	49.1%	10.4%	3.8%	
		85.8		14.2%		
6	I believe that the ICT career guidance program at school has equipped me with skills I need to make informed decisions about my future career	14	41	18	33	0.059
		13.2%	38.7%	17%	31.1%	
		51.9%		48.1%		
7	I have made up my mind regarding my future career	12	28	65	1	0.707
		11.3%	26.4%	61.3%	0.9%	
		37.7%		62.3%		
8	I think I will keep changing my opinion regarding future career	39	21	46	0	0.897
		36.8%	19.8%	43.4%	0%	
		56.6%		43.4%		
9	In making up my mind about future career, I will think about labor market	0	6	72	28	0.529
		0%	5.7%	67.9%	26.4%	
		5.7%		94.3%		
10	Parents and friends are more reliable career advisors than school career guidance program	20	35	30	21	0.016
		18.9%	33%	28.3%	19.8%	
		51.9%		48.1%		
11	The score I give for school's ICT-assisted career guidance program (out of 5 points)	4.10/5 = 82/100				0.955

Post-test data shows that students overall evaluation of their ICT-assisted career guidance program is more acceptable than their ICT-free program with a grand score of 82%. While students evaluation for both programs in terms of linking their choices to labor market remained almost the same (94.3%), some items on the questionnaire indicated that ICT-assisted program impacted them more positively. A detailed comparison is presented in the next section.

Pre-and Post- Data Comparison

An item by item comparison of the pre-and post-test is presented in figures 1 through 10.
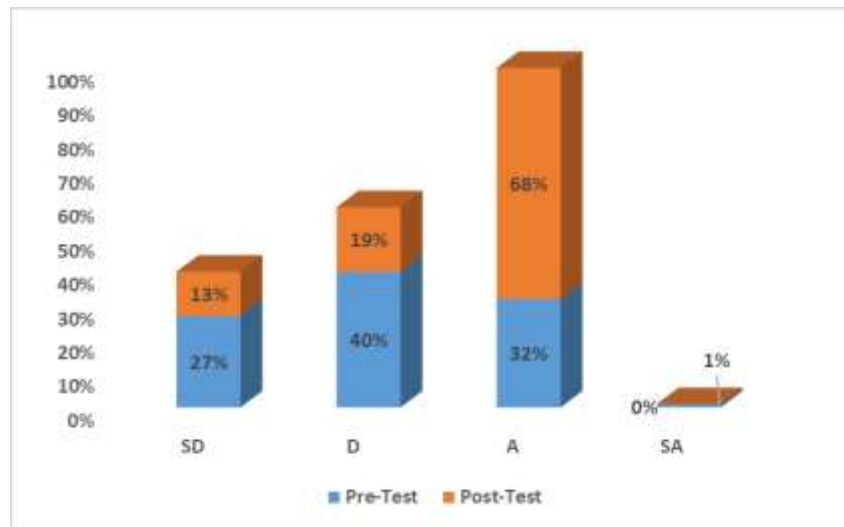
Figure 1: Comparison of pre- and post-tests regarding gaining deep understanding of students' personal interests.

Figure 1 indicates that students reported that through the ICT-assisted career guidance program, they were more chances to understand their personal interests. The figures increased form 32% for regular career guidance program against 69% for the case of ICT-assisted career guidance program.
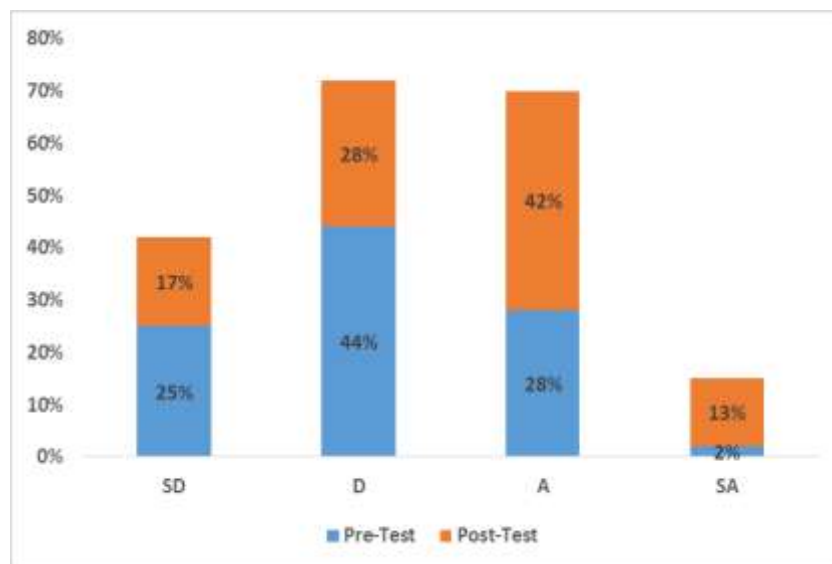

Figure 2: Comparison of pre- and post-tests regarding gaining deep understanding of students' personal potentials.

Figure 2 is also in favor of the ICT-assisted career guidance program whereby 55% students have noted that the program supported them in better understand their personal potentials against 30% who acknowledged this for the case of the regular career guidance program.
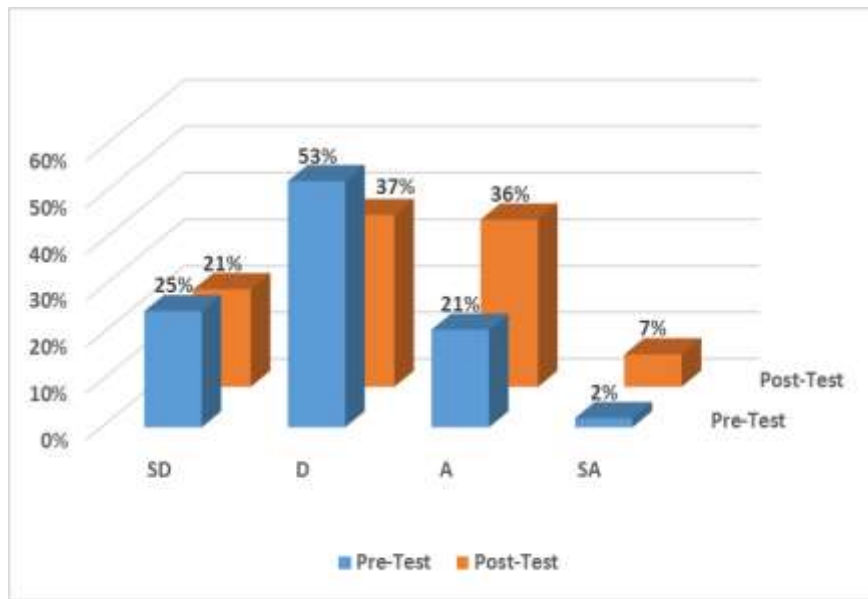
Figure 3: Comparison of pre- and post-tests regarding the ability to indicate the personal favorite work environment.

Figure 3 shows that 43% of students were positive about their favorite work environment as opposed to 23% who report the same on regular career guidance program.
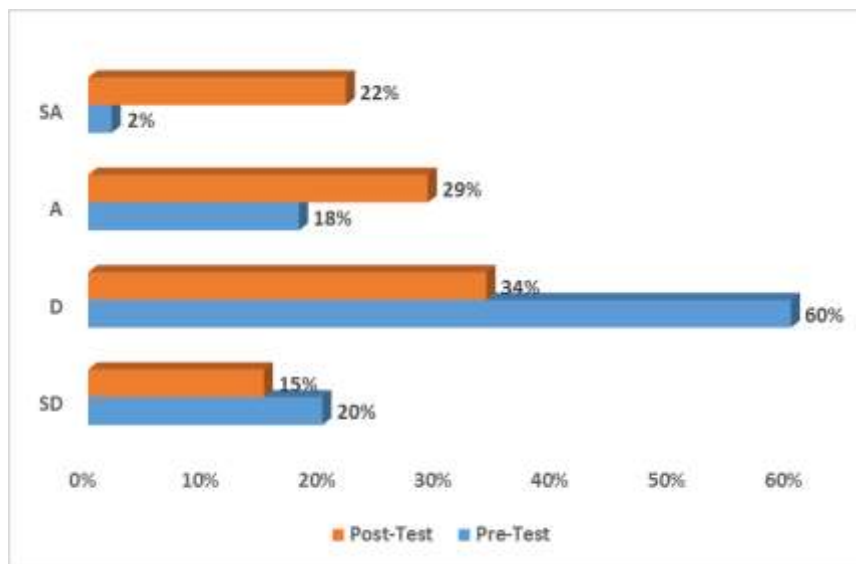

Figure 4: Comparison of pre- and post-tests regarding the ability to indicate the personal intolerable work environment.

Figure 4 is also in favor of the ICT-assisted career guidance program showing that 51% of students suggested that such a program supported them in acknowledgeing the work environments that were intolerable by them. This figure was down to only 20% in the case of the regular career guidance program.
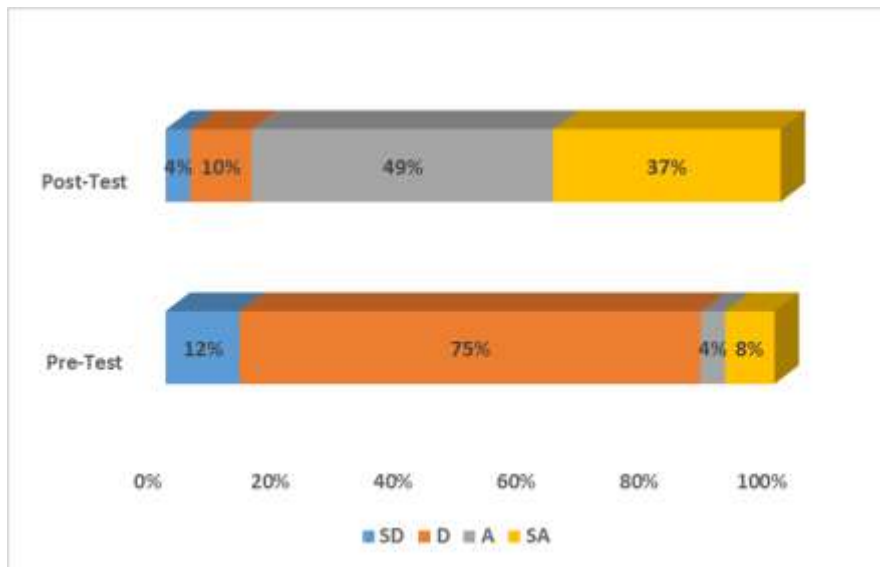
Figure 5: Comparison of pre- and post-tests regarding the ability to allow for deep understanding of professions

Figure 5 shows that while 86% of students commeded the power of the ICT-assisted career guidance program in supporting them in better understan professions; only 12% indicated that on the regular program. This is quite an impressive leap in student evaluation of the program.
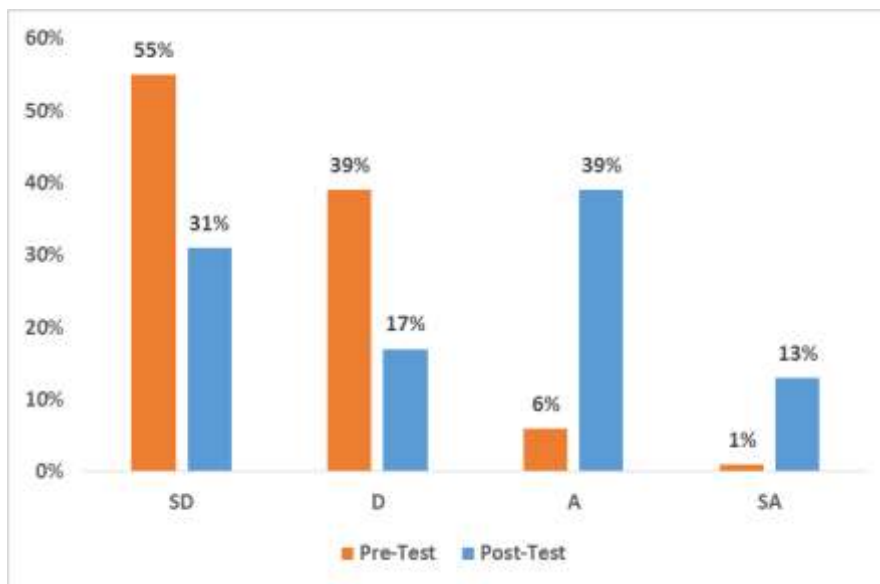

Figure 6: Comparison of pre- and post-tests regarding the ability to allow for making informed decisions regarding future careers

Figure 6 shows that 52% of students believed that the ICT-assisted career guidance program supported them in making informed decision about their future career choices. This compares to only 7% who gave the same evaluation on the regular program
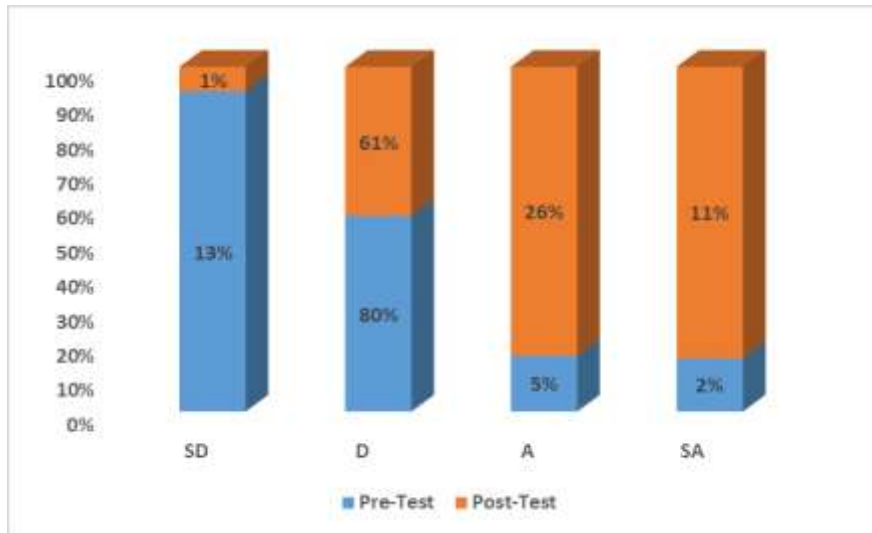

Figure 7: Comparison of pre- and post-tests regarding the ability to allow for choosing a future career

Figure 7 shows that 37% of students believed they have made up their mminds about future careers by favor of the ICT-assisted career guidance program as opposed to only 7% who said so on the regular career guidance program.
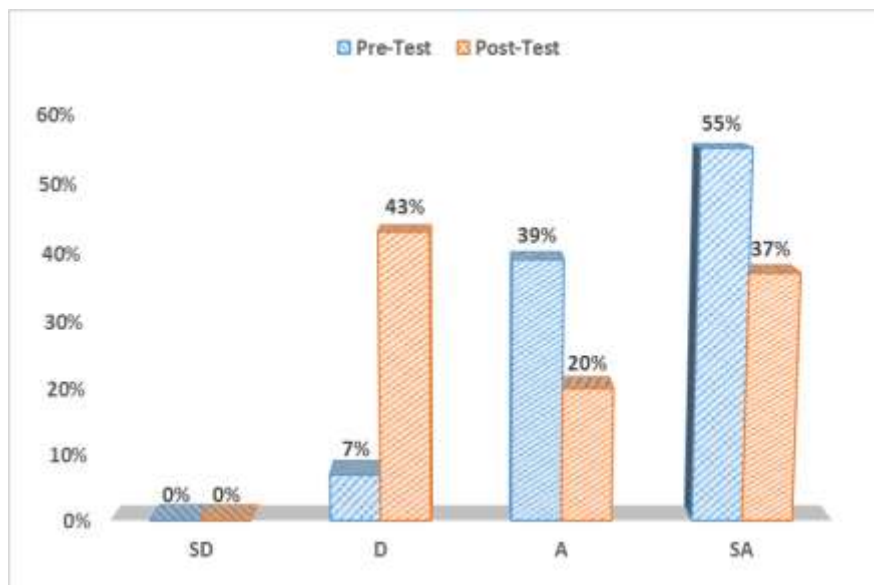

Figure 8: Comparison of pre- and post-tests regarding the ability to stick to one future career choice

While 57% of students reported that they would stop changing their minds regarding future careers on the post-test compared to 94% on the pre-test; still these figures indicate loss among students in figuring out what really suits them as a futire career as shown in figure 8.
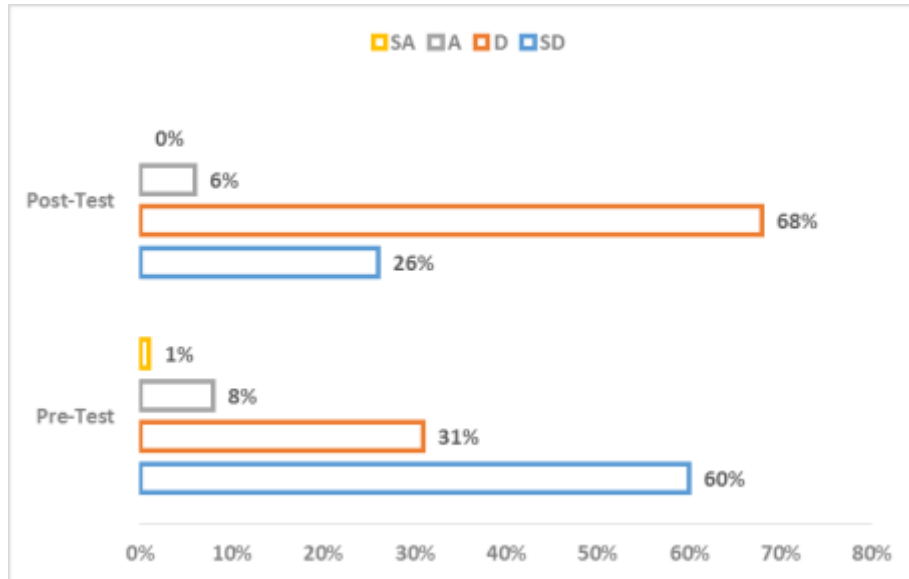

Figure 9: Comparison of pre- and post-tests regarding the ability to link future careers to labor market

On both the pre-test (9%) and the post-test (6%), students indicated that they lacked the skills that would support them in making decisions about future careers in relation to labor market. This is represented in figure 9.

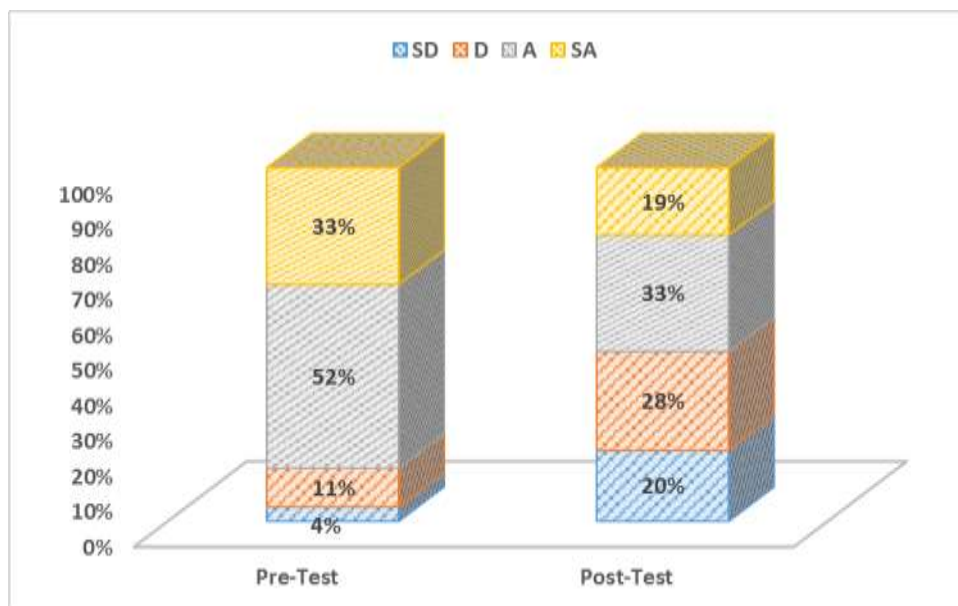**Figure 10: Comparison of pre- and post-tests regarding considering paretnts and friends as the most reliable sources for career guidance**

Figure 10 shows that in both the pre- (85%) and post-tests (52%) , students were more inclined to consider parents and friends as the most reliable sources for advising on future careers. The discrepancy between the two values was in favor of the ICT-assisted career guidance program.

5.5 Comparison of Means: Independent Sample t-tests

Table 3: Independent Sample t-tests

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Understanding Personal Interest	Equal variances assumed	.123	.726	-4.618	210	.000	-.481	.104	-.687	-.276
	Equal variances not assumed			-4.618	207.854	.000	-.481	.104	-.687	-.276
Recognizing Personal Potentials	Equal variances assumed	9.092	.003	-3.757	210	.000	-.443	.118	-.676	-.211
	Equal variances not assumed			-3.757	204.275	.000	-.443	.118	-.676	-.211
Recognizing Favorite work environment	Equal variances assumed	13.452	.000	-2.565	210	.000	-.283	.110	-.501	-.066
	Equal variances not assumed			-2.565	203.864	.000	-.283	.110	-.501	-.065
Recognizing Intolerable work environment	Equal variances assumed	40.666	.000	-4.765	210	.000	-.557	.117	-.787	-.326
	Equal variances not assumed			-4.765	184.913	.000	-.557	.117	-.787	-.326
Understanding Professions	Equal variances assumed	7.599	.006	-10.884	210	.000	-1.104	.101	-1.304	-.904

	Equal variances not assumed			-10.884	208.412	.000	-1.104	.101	-1.304	-.904
Shaping Decisions	Equal variances assumed	49.175	.000	-6.721	210	.000	-.811	.121	-1.049	-.573
	Equal variances not assumed			-6.721	174.335	.000	-.811	.121	-1.050	-.573
Making a Career Choice	Equal variances assumed	46.636	.000	-6.262	210	.000	-.528	.084	-.695	-.362
	Equal variances not assumed			-6.262	190.009	.000	-.528	.084	-.695	-.362
Keep Changing Career Choice	Equal variances assumed	30.987	.000	5.163	210	.000	.547	.106	.338	.756
	Equal variances not assumed			5.163	186.778	.000	.547	.106	.338	.756
Linking Career Choice to Labor Market	Equal variances assumed	15.166	.000	-3.608	210	.000	-.302	.084	-.467	-.137
	Equal variances not assumed			-3.608	198.150	.000	-.302	.084	-.467	-.137
Considering Parent-Friends as primary career guidance sources	Equal variances assumed	21.847	.000	5.124	210	.000	.632	.123	.389	.875
	Equal variances not assumed			5.124	194.619	.000	.632	.123	.389	.875

Table 3 shows that for p<0.005, it is justifiable to assume that the difference between the means of each of the items on the pre- and post-tests is significant. This leads to the rejection of the null hypothesis and the acceptance of the alternate hypothesis. That is to say, the ICT-assisted career guidance program has shown significant advancements compared to the regular program.

CONCLUSION

While this case study was limited to N=106 students in one public school in Beirut, Lebanon; the results were quite impressive and encourage for further investigation at a larger scale and utilizing various methods of research. This study have shown that ICTs possess the potential of leveraging students' benefits from career guidance programs administered at schools. ICT seem to have offered quick and cost effective solution to students' needs in the domain of career orientation and guidance.

The ICT-assisted career guidance program has proven to support students to learn better about their personal interest, potentials, their optimum work conditions, and their intolerable work environments. It has also helped them enhance their skills at making more informed decisions and to acquire deeper understanding of careers, and hence supported them in arriving at a less number of choices for future career choices. While this study did not offer any information about the means via which ICT supported students in achieving that, the literature would benefit from a qualitative study that examines the intervention itself.

This study has shown that the ICT-assisted career guidance intervention program left less impact on students in terms of considering their parents and friends as the most reliable sources for advising on future careers. Similarly, it was least bold in terms of linking their choices to labor market. These findings should not be related to the nature of ICT-assisted career guidance programs, but rather to the design of the career guidance program utilized in school in the first place.

LIMITATIONS OF THE STUDY AND RECOMMENDATIONS

This study is confronted with several limitations that include:

Sample: The sample was relatively small (N=106). It was selected from one secondary public school in Beirut. It would be useful to involve a much larger sample that would better represent student population. In addition, the case study was conducted in one public school. It would be beneficial to represent private schooling in any future research addressing this topic, especially that private schools account for more than 60% of student enrollment in Lebanon according to Lebanese National Center for Research an Development. Selecting a stratified sample that account for both private and public schools from all the six governorates of Lebanon would be optimum.

Research Design: This study did not investigate any differences in the delivery method of career guidance and orientation by the teacher. Intentionally, the teacher was not given any training or hints on how to use the suggested website. Conducting a systematic evaluation of teaching methods employed within and apart from the ICT-assisted career guidance intervention would assure that the teacher did not flip to more active teaching methods during the intervention, despite the fact researchers assured her to utilize her normal teaching strategies. Thus, this is a very important recommendation for future research. Moreover, this study was purely quantitative. The study would benefit from mixed methods employing qualitative interviewing with students and the teacher.

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