IT Students' Experiences during Time of War

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Abstract: This study was carried out to study what IT students go through in times of wars and conflicts. Most of the literature that studied impacts of war on education studied the general educational system or children's' education. There is lack of studies that study specific educational field and how it is impacted. In this study more than 90 IT students currently attending universities in Baghdad and Diyala in Iraq were surveyed. The results showed that the trip to and from the university is the primary and number one issue the students face studying IT. It was also found that there is no practical solution the authorities undertake to minimize the issues the students face. As a solution a cloud based learning management system with offline capabilities was proposed to solve the major issues the IT students face studying IT.

Keywords: IT students, IT Education, war experiences, war impacts.

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1. INTRODUCTION

Education is essential for any society. With it health, economy, peace and other life essentials could be enhanced [1]. Its importance stretches to all age groups despite their positions even higher ups and decision makers [2].In many cases changes in society cannot happen without it [2].

Education however is a broad term. It has many building blocks. Students are an example and they could be further detailed and specified by age group, field of study, gender and so on. This makes education a rich field to study and enhance and there are many studies [3][4] [5]that are aimed towards that.

Information Technology (IT) (referring to computer science, software engineering and Computer engineering) education is one of the important fields in education simply because IT is one of the important aspects of the society and is introduced in almost all of its levels [6]. Since it is in almost all aspects of society its importance increases even more in times of war and conflicts to either maintain or recover different aspects of society.

Wars and conflicts without doubt produce unstable life within the country. They disturb education just like they disturb other aspects of society like economy [7] [26] [27], social life [8] and health [9]. Education at times suffer devastating results [10][11] [12] [13], that's why there are efforts to always research and enhance it. Even the United Nations created international resolutions to enhance and recover it [28].

Despite the fact that there are many researches taking place on education in general and in times of war, there is lack of researches on IT itself and specifically students' experiences during conflicts. That is why this study was carried out.

2. RESEARCH PROBLEM

Despite the fact that many studies have been carried out to study the impacts of wars and conflicts on education [10] [14] [15] [16] [29];many of them are generic[11]and not focused on IT. Also many are specific to children [1][10]. Each field and its students as well as lecturers could be impacted differently and at different degrees of severity. Another issue with the existing studies is that they are mostly post war conclusions[17][18] or studied old wars like World War II [19].

As mentioned earlier IT is one of the important fields in education however it is rarely looked at in times of war. Therefore, the present study was carried out to investigate IT during times of war and conflict and specifically IT students' experiences.

3. RESEARCH QUESTIONS
This research aims to answer the following questions:
1- What issues IT students face studying IT during wars and conflicts?
2- How are they dealing with them?
3- Is there a solution adopted by the authorities and decision makers that would aid students during wars and/or conflicts?

4. LITERATURE REVIEW
Despite the fact that the literature on the subject is very scarce ,the authors found the following:

4.1 Russian Invasion on Georgia:

The results of the Russian invasion on Georgia were, increase in dropouts, books stopped publishing, properties damaged and faculty fled [11]. Even though the numbers reflect the extent of damage caused to the general educational system which unfortunately was quite devastating, it only reflected the end result of the invasion and did not show what students had to go through during the invasion nor did it propose a solution that could have minimized those results.

4.2 United Nations Educational, Scientific and Cultural Organization (UNESCO) Research:

Another research is of UNESCO. The report showed that Iraq had a strong educational system between the years 1950-1979.The report focused only on years of educational attainment and illiteracy for each gender. The report reflected that each gender was effected differently. However the effect was not devastating. In fact in the Iran-Iraq war, impacts where positive; illiteracy decreased and years of educational attainment increased. Interestingly after the latter wars (Gulf and Iraq),there was decrease in years of educational attainment and increase in illiteracy[15]. This shows that wars do not have the same impacts rather each could impact differently.

4.3 Human Security Report Project (HSRP)

In HSRP it is mentioned that many countries did not endure much damage as to what might be reflected in many literature. Rather in some cases the contrary happened, some educational systems showed improvements during conflicts. They reasoned that mainly to the conflict not being deadly or destructive to reverse the impact along with other facilitations for example international aids[16]. Their conclusion was based on UNESCO's Report [15] and it too was generic and focused primarily on children.

4.4 Education for Peace in Iraq Center (EPIC) Interview:

In an interview published by [13], Cpt. Jon Powers[1] mentioned that over 3.4 million young people in Iraq do not attend schools; he also referred to a statistic stated by the Iraqi ministry of education in which children's attendance to school dropped from 57% to 30% in 2006. Many of the students suffered mental health issues because of violence [13] [29]. Despite the terrible numbers that somewhat prove the bad impacts wars leave behind; it is clear that most focus is on children. However it is worth noting that this proves the previously stated point that each war could have different impacts on society.

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[1]**Cpt. Jonathan Powers** founder of War Kid Relief. War Kid Relief is a group intended to aid in helping kids off street and armed groups and the likes.

4.5 Concluding remarks

From the sources [15][16] it is clear that conflicts depending on their type exert certain damages on education. In almost all cases, the numbers showed decline in years of educational attainment after conflicts and sometimes during the conflict as well. To understand why there is a larger decline after the conflicts than during the conflict one has to understand the issues the students face from the students themselves.

Also none of the sources touched on IT or other specific field of study, most studies are generalizations of the educational systems' performances. This adds the need to study IT during wars and conflict and specifically from students' perspective, as they are the ones in need of attention the most. Without them there would not be education.

By knowing the issues officials could utilize a solution that solves those issues and accordingly minimize the impacts of conflict or war on students and accordingly on education and ultimately maintain a good educational system. What good is education if what the students are going through is something that holds them back from getting educated? This research is aimed to answer that and study the issues IT students face during conflicts.

5. METHODOLOGY
5.1 Method

The method used in this research is the descriptive (quantitative)method executed through surveys [20]. The reason behind this choice is the nature of questions being exploratory and also going for interviews would not be feasible to do over large population hence the open ended questions using quantitative method.

5.2 Tools

This research is executed through utilizing online and offline surveys with open ended questions to avoid any form of feeding the answers to the students and also capture feelings and insights.

The Survey questions were made with problem exploration in mind. The questions were structured to be short and specific. The technique utilized to create the questions was a technique widely used by entrepreneurs to validate a problem as well as validate a solution[21]. The technique is an adaptation of the Five Whys technique. The latter is widely used to discover the cause of a problem and come up with a solution [22].

A direct simple question of "what issues are you facing while studying IT" could be used instead of several questions; however that would jeopardize knowing the details of the problem and hence solving it.

Google Docs was used for the online survey to create the questionnaire; reasons are to suffice a proper professional look and appeal; Google docs had very clean simple and comforting look; it did not have extra information that would ruin the look of the questionnaire like in having advertisements all over the page. Google docs was also chosen because it made for easy distribution and portability. By distribution it was easy to send the form imbedded in emails. As for portability it preserved its simple organized look when viewed in various devices.

Before the distribution of the survey, a pilot study was carried out. It involved a Psychology professor from the University of Bahrain and a lecturer in University of Baghdad. Issues were identified and corrected accordingly. The pilot study was important to ensure validity of the survey.

5.3 Sample
A random sample was chosen from two public universities and one private IT College. All in Iraq and are located in the provinces, Diyala and Baghdad.

The reason why Iraq is chosen, is because one of the researchers has access to a sample from Iraq and also given the country has gone through several conflicts and is expected to have a solution or a mechanism that helps students through the hard times.

The researchers could not obtain an accurate number of IT students in the two Universities and the private college. However the estimated collective number of IT students in all three institutes is about 600 students. The researchers tried to broadcast the survey to students through word of mouth and social networks to an estimated number of 230 students. The way the researchers came with sample number is through the utilization of the table developed by Krejcie and Morgan for recommended sampling [23].

The survey was put online for two months with constant call for participation. The response rate was very poor so the researchers went for offline approach in which the surveys were printed and distributed to random students in the three different institutes. The total number of students accessed was 97 students. 6 surveys where dropped because the answers were vague and incomplete.

Majority of respondents were male with a percentage of 64%.

5.4 Gender Responses
Table1: Number of respondents to the survey.

Gender	Number
Male	58
Female	33
Total	91

5.5 Statistical Analysis
The easiest and appropriate type of analysis for this research is the exploratory analysis .Because it allows seeing what the data actually represents and that generally by investigating what the responses of the question(s) represent [24].

6. RESEARCH RESULTS AND DISCUSSION
Q: Are the students dropping out? And why? And does gender matter?

All participants were asked of how frequent they attended university, the assumption concluded from some of the literature [15][16], is that in times of conflict/war students would not be skipping classes.

Table2: Results of daily attendance to university

Frequency of attendance:	
5 times	78%
Other Options	22%

78% go daily to university which forms the majority of responses. For the other 22%, their answers varied between (once, twice, 3 times, 4 times and depends on the circumstances).

Gender did not make much difference. Most of both genders attended daily. 72% of male respondents said they attended daily and 88% of Female respondents said they attended daily as well. Each gender yielded similar conclusion of that the majority attended daily and that there isn't much difference between the two. To further validate the hypotheses (that there isn't much difference between the two genders) a t-test was conducted between the two samples assuming unequal variances [25]. Using Microsoft Excel that yielded (p) = 0.257126161 which is more than 0.05 (the value which we would reject the hypothesis) and therefore we will accept the hypotheses that there is no difference between the two genders.

To further understand the reasons behind the responses coming as the assumption, a question of "why" was asked as a follow up question.

For those who attended daily it was because of the university's policy. Attendance is marked and is mandatory. Students below certain attendance score might face suspension.

For those who did not attend daily which made 22% of the responses, mentioned three main reasons.
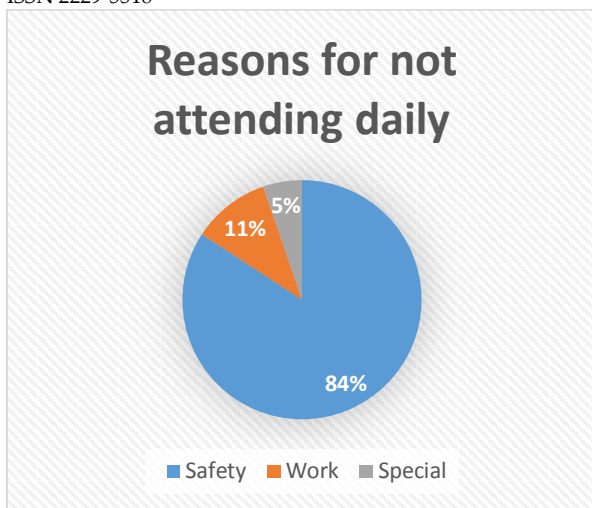
Reasons for not attending daily

Figure1: Pie chart showing frequencies for reason of not attending daily to university.

84% where due to safety and security issues attending to and leaving university. Of the mentioned issues are fear of being kidnapped or killed. Also curfew was one of the issues mentioned.

11% of those who did not attend daily to university had to take a side job to support themselves and their families due to bad economics. 5% of the respondents said it is because of personal reasons and refrained from mentioning those reasons.

From the results, even with the hardships of being in a place with conflict or war, most of IT students both male and female attended university daily; mainly because of the obligatory attendance. Such that they are worried they might be suspended and be delayed from their studies.

The obligatory attendance can be seen as one of the reasons why during wars or conflicts years of educational attainment is not effected much, alongside the reasons mentioned in [16].The obligatory attendance can also be seen as a reason why years of educational attainment decreased after the conflicts and wars. Such that the students did not meet certain attendance percentages. Or even that the burden the students carry to attend will eventually get to them and eventually make them quit. As the 22% implied not attending daily was one way they dealt with the conflict or war.

Another finding is that for IT students; gender did not matter when studying attendance. In this research they both yielded similar conclusion.

The questions that followed were to reveal the issues that the conflict or war has on students.

Q What issues IT students face studying IT during wars and conflicts?

All students replied to this question and most with detail. From their responses one can set eight themes. The themes are: Safety and Security and it showed in 93% of the responses, Public Services which appeared in 14% of the responses, Psychological which appeared in 13% of the responses, Telecommunications and Connection which appeared in 12% of the responses, Policy which appeared in 3% of the responses, Educational which appeared in 3% of the responses and politics showed in 2% of the responses.

Safety and Security theme represent issues that touch on the students' lives and wellbeing attending and leaving university.

Public Services represent responses related to means students utilize in order to attend the university itself such as lack of transportation

Psychological issues represent issues related to the student self-esteem and stress such as living in fear for one's family, or lack of concentration due to insecurity.

Telecommunications/connection are issues related to the respondent being connected to the internet such as bad or cuts in internet connection.

Policy theme represents issues related to the university or ministry of education policies. Such as obligatory attendance to classes and lack of realism in curriculum plans and direct circumstances.

Educational Standard represents issues related to quality of education including the quality of lecturers themselves. For example lack of proper lecturers and outdated programs.

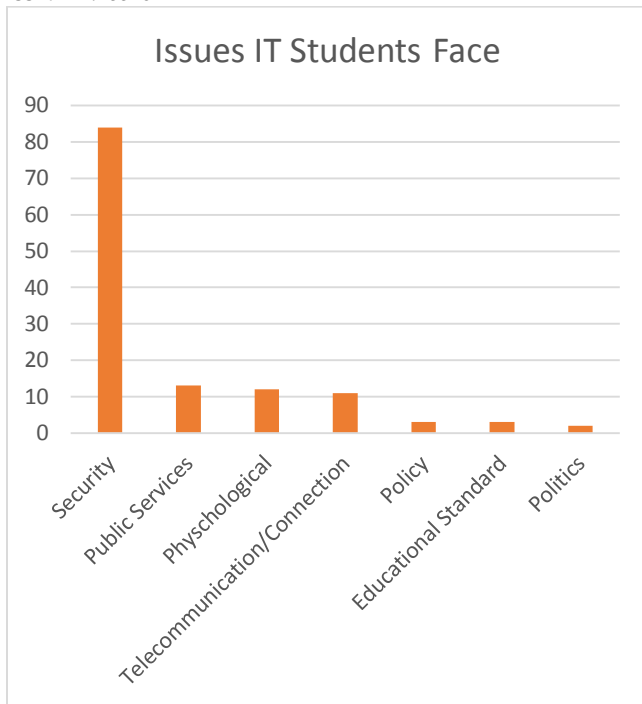Politics theme represents issues related to the type of conflict itself ,an example is secular racism.

Figure 2: Chart showing issues students face and their occurrences.

Almost all respondents mentioned safety and security as one of their issues. The second most mentioned issues related to public services followed by psychological and telecommunication issues.
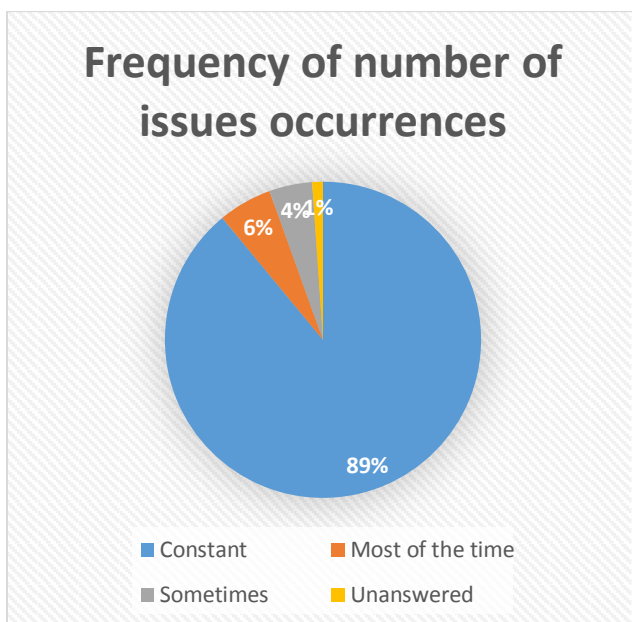
Q How frequent they face those issues?

Figure3: Pie Chart showing frequency of number of occurrences of issues faced by the students.

89% of the respondents face the issues constantly throughout the conflict. 6% face the issues most of the time and 4% of the respondents face the issues sometimes.

For those who mentioned safety and security as an issue during their studies; 95.3% of them face it daily. 100% of those who mentioned public services issues and telecommunications issues mentioned that that is a daily struggle.

With the majority of respondents elaborating on their answers to this question reflects the frustration and agony they are going through and want to express it any chance they get.

From their responses the most mentioned issues are related to the safety and security attending and leaving university. That reflects that the most difficult part for IT students is the trip to and from the university, what backs this up is that the second most mentioned issues are related to public services. This finding further supports what Lai and Thayne [10] pointed out in their research, which is that civil wars destroy social services.

What adds to the difficulty is the attendance policy that obligates the students to attend. All of that has led the students to divert their minds further away from studies. That is also concluded from the responses. Since very few mentioned difficulties related to the studies itself like lack of proper educational standard rather most mentioned issues that could enable the environment of study.

So attending university daily does not mean good education, it merely means that the person was in the premises or class.

Q How are students dealing with the issues they face?

Before proposing any solution one should study the existing solutions and accordingly the results would feed the final proposition. Hence the question "what are you doing to solve those issues?"
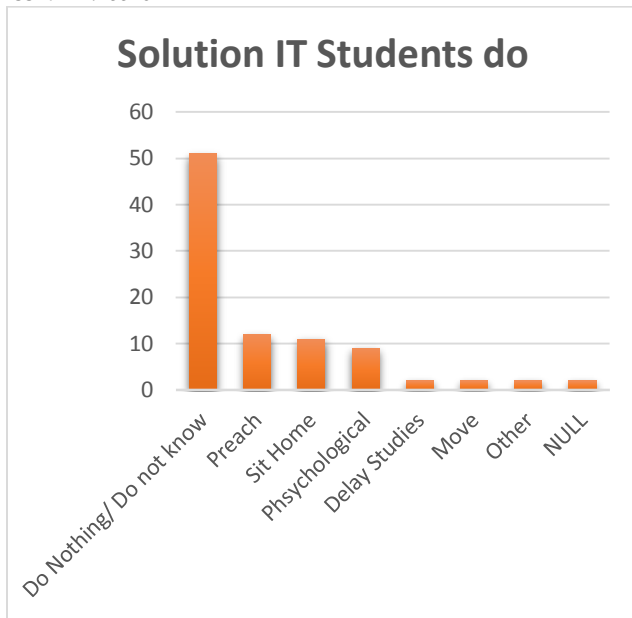
Figure4: Chart showing solutions carried out by students in times of wars and conflicts.

56% of students do nothing and/or do not know what should be done because to them the solution has to come from the authorities or decision makers. 13% of individuals however try to do something on their own and preach and educate others to try to keep the society they live in close and strong.

Sitting at home is also a solution mentioned by 12% of the students however they do not see it as a viable solution because of boredom sitting at home and doing nothing.

10% of the students mentioned suppressing stress and fear and try to not think about it or at least try to concentrate on studies but that to them is not a convenient solution because eventually they are always reminded and can't close an eye for the difficulties mentioned earlier.

Few (2%) of the respondents tend to delay their studies by a year or so until things are less dangerous, while others (2%) try to move to another place or country but in both cases the solution cannot be applied to all; just few who have the resources and or the chance.

From the responses the majority of students feel helpless doing anything. According to them the solution has to come from a higher authority that governs the policies. Even for the solutions conducted by some students seem ineffective but they are still carrying it out because it is their getaway or at least a mean for them to feel that they are trying to make a change. Interestingly though none of the respondents mentioned dropout as a possible solution which supports the literature that during conflicts the damages are not severe. This does not mean that dropouts do not happen after the conflict.

Q Is there a solution adopted by the authorities and decision makers that would aid students during wars and/or conflicts?
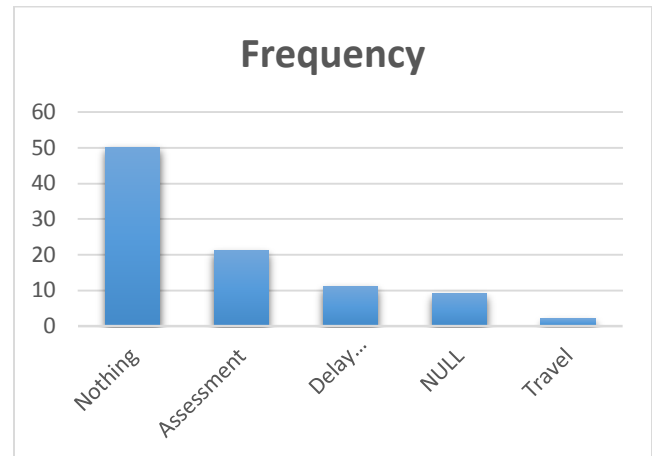

Figure 5: Chart showing solutions provided by ministry of education.

The majority of students said that the ministry is not providing any solutions to what they are going through; even if there are some initiatives they do not suite to be a proper solution.

For those who think that the ministry is providing a solution; the solutions could be put to three themes.

The first theme which is the most mentioned represents solutions regarding assessment. The ministry does curve ups, allows students for an extra recovery exam and postpone exams if there was an extreme uprising.

The second theme which is postponing. It represents solutions that allows the student to delay a semester or a year without counting it as a failed semester or year.

There was a minor percentage which considered moving to a safer place a solution provided by the ministry. They said that they somewhat make it easy for them to transfer to a safer place.

There is not much the ministry is doing for the Students that would minimize the issues IT students face. Unlike the assumption made in research questions; the officials do not have any form of tool for IT students that could solve the issues the students face. Even for the solutions the students think the ministry is providing do not practically solve the main issue the students' face which is the trip to and from the university.The impacts of those issues on students are mattersof life and death and with that worry students are not focusing nor paying much attention to what they are studying despite the fact that the majority are attending daily. Their attendance is in accordance to the policy. That interns will have a negative effect on the educational system as it will degrade the quality of education.

Q What could be done with IT that could aid in minimizing the issues the students face during wars and conflict?

From the results the trip to and from the university is the most difficult part for students studying while there is a conflict or war. The ministry on the other hand is providing solutions though they might solve some problems but not the main problems the students are facing. The university could start adopting in times of conflicts a cloud-based learning management system with virtual classroom and offline capabilities that would sync the students' progress to the cloud upon connection. Such that each student could have an offline application in which they attend virtual classrooms and conduct assessments. The application could detect if there is an internet connection to sync the students' progress reports and achievements as well as their work. If there was not an internet connection for a given period of time the student could attend once every now and then or so to deliver that report to the lecturer. The lecturer imports the student reports and each student's achievement would be displayed to the lecturer.

This method would create a better environment to what the students in times of conflict have to deal with or go through.

The officials should look into their policies in times of conflicts because the educational quality is at stake even if the students are attending daily.

7. CONCLUSION

There is minimal dropouts for IT students during wars and conflicts. However the students face several issues while studying IT most prominent ones are related to the trip attending and leaving the University. The trip to them is the most difficult experience that they have to go through. By having to deal with that the students' focus on studies degrades gradually.

The Ministry on the other hand does not have a suitable solution to the issues the students face during wars and conflicts. However with utilizing IT there can be a solution that can take place, which is a cloud based learning management system with offline, sync and reporting capabilities. That, will minimize the impact of the major issues the student face which is attending and leaving university.

Implementing such a solution could start with adopting a tool similar to Moodle[2] and customizing it to suite the stated suggestions.

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