## Annex 4: Qualitative Data Analysis Reports

**Report 1: Data Analysis Report (L0-L1 Stories)**

****Information and Communication Technologies (ICT) is a global standard term for all computer, software and communication technology related fields. ICT have recently gained groundswell of educational interest. The nature of ICT has highly changed the face of education over the last two decades. According to Underwood ICT is an innovative teaching tool used to support pedagogy (Underwood, 2006). It encourages independent and active learning, and students’ responsibility for their own learning (Lewin et al, 2000). It also increases motivation, organization skills and responsibility among learners (Perry, 2003).

ICT has change the world rapidly in lots of ways, it has implications for how we act and interact at work, in education, in civic life and at home, these changes have led many scholars to point to a new set of skills – the so-called 21st century skills (Velden, 2012)

“Twenty-first century skills, technology and learning” is a term used to signal educational change in policies and practices, and has been widely and loosely defined in terms of the needs of the ‘next generation’ of learners. Learners’ success in today’s world requires the ability to access, synthesize, and communicate information; to work collaboratively across differences to solve complex problems; and to create new knowledge through the innovative use of multiple technologies (Ledward, 2011).

This report describes the current ground practices of teachers and learners in Palestine, addressing in particular the following three questions:

1. What is the ICT impact on teachers’ and students’ behavior?
2. What are the current major trends in ICT and the 21st century skills in Palestinian schools?
3. What are the obstacles that face implementation of ICT in the Palestinian schools?

Before addressing these questions in details, it is important to define the 21st century skills. The North Central Regional Education Laboratory (NCREL, 2003) has identified a framework of the 21st century skills, which is formed of four categories: digital age literacies, inventive thinking, effective communication, and high productivity. The Educational Testing Service (ETS, 2007) defines the 21st century learning skills as the ability to collect and/or retrieve information, organize and manage information, evaluate the quality, relevance, and usefulness of information, and generate accurate information through the use of existing resources.

The desired outcomes of the 21st century learning framework include learning traditional school subjects and contemporary content codes (i.e. math, science, language arts, and social studies), in combination with the interdisciplinary 21st century codes (Research Center, 2010).

On June 2014, 153 School teachers from five Palestinian districts (Hebron, Bethlehem, Ramallah, Jenin and Nablus), were interviewed and asked about their teaching practices using ICT in the classroom and its impact –if any- on their students. Their stories were audio taped and transcribed by (11) Al Quds Open University (QOU) field researchers (Appendix 1). This mass of interview transcripts was reviewed and summarized using qualitative analysis method. Pointing out that there is no ‘quick fix’ technique in qualitative analysis, so there are probably as many different ways of analyzing qualitative data as there are qualitative researchers doing it (Pope and Mays, 2006). However there are some theoretical approaches to choose from (Lacey, 2007).

**Methodology and Thematic Analysis of Data:**

The Grounded Theory[[1]](#footnote-1) approach was used for analysis because it’s the most suitable due to the nature of the data. The process consists of organizing and reducing the interview data gathered from participants into codes which, in turn, can be fed into descriptions, models, or theories.

**Familiarizations**:

- A quick reading of 10 randomly selected transcripts, taking notes of the first impressions, then carefully reread the transcripts once more word by word.

- Repeated the process with 30 other randomly selected transcripts, highlighting key words, using labels (numbers) for codes, the idea or the definition of each cod found to be applied later in a standard way to all transcripts *Fig1* .This provided a key idea about the major themes that were *Fig1*: coding transcript

behind the collection of this massive amount of empirical data.

- Interviewee’s demographic data was written on an Excel file (see appendix 2).

- Then all transcripts (153 Interviewee’s stories) were given codes, Each code consists of five digits, written in a sequential order, taking into consideration that the first digit represents the initial letter of each district ;(H: Hebron, R : Ramallah, J: Jenin, B:Bethlehem, N: Nablus). (See appendix 3).

**Open coding:** At this stageall data was explored carefully and examined. It is important to realize that sometimes people cannot express what is on their minds with the right words (they say something, while they mean something else). For example one teacher said:

*“---- the achievement of my students increased due to using Flash program and PowerPoint presentations, -----they become active learners----” (H No33)*

The teacher actually expressed his opinion by saying that his students became active learners, while what actually happened is that his students became more active in class.

**Thematic Coding**: At this step, relevant words, phrases, sections that could describe activities, process, concepts, etc. were labeled and coded. The following selected examples clarify that;

**Example 1**:

*“------Of the most important phenomenon that was noticed and tested when using ICT, was the increased discipline in classroom ----“(H No1).*

This statement indicates a change in students’ behavior as they became more discipline, the statement was relevant, since the interviewer explicitly stated that it was important, he even tested the statement, moreover, this statement was frequently repeated in several other transcripts.(See :H No19, H No 41, N No8,---).

 **Example 2:**

 *“----- students created a biology group on Facebook, named “Qasim Rimawi Students Club” ---- they downloaded material from the YouTube site, that explain taught materials from their textbook--- used electronic games ----the students shared duties and responsibilities.--- My role (teacher) was a facilitator for the group---”. (R No 32).*

This statement indicates that students have become a part of their own learning process. The statement is clear and backed up with a good evidence. It is also consistent with the Student-Centered Learning Theory; that shifts the focus of instruction from the [teacher](http://en.wikipedia.org/wiki/Teacher) to the [student](http://en.wikipedia.org/wiki/Student) (Jones, 2007).

 **Example3**: This is an example of a term that was repeated a lot (more than 32 times)

*“Poor IT Infrastructure”*

It is considered as an obstacle in using ICT inside the classroom (Table 5). But what came as a surprise, is that 37.5% of those who said the above statement were teachers from Ramallah. Although Ramallah is supposed to be the “Smart City” as announced in 2014 by Ramallah Municipality and the Palestine Telecommunications Company “PalTel”[[2]](#footnote-2).

By the end of this step; 27 codes were created (*see table 1 below*). These codes were implemented in an excel sheet; each column represents a code, each row represents a story. In front of each story the sign (x) indicates that the transcript contains this cod, otherwise it is left blank (appendix 2)



*Fig2: Part of excel file*

**Selective Coding**: In this step all codes from last step were retrieved. Codes with same phenomenon, idea, explanation or activity were grouped together in the same category. Five major categories (Table 1) where created as follows:

**-*Teachers’ behavior***: Behavior refers to the range of [activities](http://en.wikipedia.org/wiki/Behavior) exhibited by [humans](http://en.wikipedia.org/wiki/Humans) (Carr-Back, 2009). Literature studies define teacher’s behavior as the teacher’s methods of discipline and methods of teaching, particularly those activities that are concerned with the direction of guidance of learning of others (Keeley et. al, 2006). Behavior is influenced by [attitudes](http://en.wikipedia.org/wiki/Attitude_%28psychology%29), [values](http://en.wikipedia.org/wiki/Value_%28personal_and_cultural%29), [ethics](http://en.wikipedia.org/wiki/Ethics), profession, along many other things (Yucel, 2007). In light of the Literature definition of teachers behavior and its characteristics, the following codes; teachers effort, teachers enthusiasm, collaboration with colleagues, social behavior, student centered teaching, change in teaching methods, where grouped in one category called teachers behavior.

**-*Students’ behavior*:** The role of the students in modern education is to assimilate the skills and the knowledge to become a contributing member of that society. This would direct their classroom behavior to be self-motivated, self –aware of lifelong learning, it would also raise their thinking levels (Oklahoma City Community College, 2012). Based on that, the codes that are represented; students’ thinking levels, achievements, participations, motivations, discipline and learning enjoyment, where grouped in one category called students’ behaviors.

**- *Education Towards 21thC skills***: The 21st century skills is a set of abilities that students need to develop in order to succeed in the information age. It describes the skills, knowledge and expertise students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise and literacies (KSRED, 2010). Hence, the following codes; Students as part of the teaching and learning, collaborative learning, learning by research, active learning, brain storming, change learning methods, are gathered to form education towards 21st C skills category.

-***Obstacles***: It refers to something that interferes with or prevents action or progress. An obstacle could be material or nonmaterial that stands in the way of literal or figurative progress\*. Hence we could assume that the cods; big school's curriculum, inappropriate or poor IT infrastructure at schools or homes, parents’ approval of using ICT, Harder to monitoring work done using ICT, shortage of time, lack of computer skills, could be considered as obstacles in education

***-Community*:** It is the relationship among parties from the school and the local community, so the relationship that forms between students and their parent, also between teachers and students’ families in dealing with school issues is conceded to be a community issue.

Table 1 summarizes the categories and their relative codes.

|  |  |
| --- | --- |
| Categories | Codes |
| Teachers’ Behaviors | - Decreased teaching effort-Teaching enthusiasm- Collaboration with colleagues -Social behavior-Student centered teaching-Change in teaching methods |
| Students’ Behaviors | -Thinking levels-Achievement-Participation-Motivation-Enjoy learning-Discipline |
| Education Towards 21thC skills | -Students as a part of the teaching and learning-Collaborative learning-Learning by research-Active learning-Brain storming-Change learning methods |
| Obstacles | - Big school's curriculum-Inappropriate or poor IT infrastructure (school/ home)- Parents’ approval of using ICT-Harder to monitor-Not enough time-Lack of computer skills |
| Community | -Student's \_ parent’s involvement-Teachers\_ families’ involvement |

\* <http://dictionary.reference.com/browse/obstacle>

**Validity**

To ensure validity many techniques have been used, such as:

- Random selection of participants.

- Use of controls throughout the data collection process (given by the researchers, see Dr. Yousef’s report’-----------*with 10 questions leading to composing stories showing the MSC. The field researchers wrote down each story as is from its story-teller and used some supporting tools such as audio recorders for accurate documentation*-------‘)

- Use of controls throughout the data collection process: A clearly designed a purpose-built coding system to organize relative data, and to address each information, for each transcript, and for the entire data set.

- Verified individual response consistency, confirmed appropriate responses and detected inadmissible responses.

- Accompanied notes and documentation about the data.

- Dump the data in the categorized tables using consistent terminology.

-Checked data completeness

- Double-checked coding

**Reliability**

(Joppe, 2000) defines reliability as: “The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable” *(p:1).*

To achieve acceptable levels of reliability, steps given in (Hruschka, 2004) were followed:

-Codebook creation: To generate an initial draft codebook, a portion of 10 stories were examined the responses and to propose a set of codes relevant to the study goals. The team member discusses the results and agreed on an initial master list of codes.

-Codebook modification: The interceder reliability is judged and discussed by the team leader, and finally sufficient interceder agreement is achieved.

-Coding the entire stories and segmentation of text: After the initial draft codebook is developed. Each and every story of the 153 was considered to capture appropriate variation, then segmented into units of observation and each coding of that segment (words, sentences, paragraphs---), considered as a measurement. This division will not change the story derived from the interviewers, however, it regulates the process of interpretation. The 153 text stories were coded and categorized according to instructions included in the draft codebook (5 major category and 27 subcategories). Systematic coding process was reviewed and agreed upon by the team members.

**Discussion:**

To answer the first question of the study that is “***What is the ICT impact on teachers’ and students’ behavior?”*** A deep look was given to the following categories:

**-Teachers’ Behaviors**: Table 1 summarized the aspect of changes that occurred as a result of the teachers using ICT in their teaching practice.

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Table 1: Numbers and Percentages of Changes in Teacher’s Behavior

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region | Decreased Time for preparation | Decreased Effort | More enthusiasm | Increased Participation | Increased Social | Student centered teaching | Change in teaching methods | Total | % |
|  |  No | % |  No | % |  No | % |  No | % |  No | % |  No | % |  No | % |  No | % |
| Hebron | 3 | 23.2 | 2 | 28.5 | 6 | 42.9 | 3 | 25 | 2 | 25 | 4 | 19 | 13 | 50 | 33 | 32.7 |
| Bethlehem | 1 | 7.7 | 0 | 0 | 3 | 21.4 | 5 | 41.7 | 1 | 12.5 | 2 | 9.5 | 1 | 3.8 | 13 | 12.8 |
| Nablus | 4 | 30.7 | 1 | 14.3 | 3 | 21.4 | 3 | 25 | 3 | 37.5 | 15 | 71.5 | 5 | 19.2 | 34 | 33.6 |
| Ramallah | 1 | 7.7 | 1 | 14.3 | 0 | 0 | 1 | 8.3 | 2 | 25 | 0 | 0 | 5 | 19.2 | 10 | 10 |
| Jenin | 4 | 30.7 | 3 | 42.9 | 2 | 14.3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7.8 | 11 | 10.9 |
| SUM  | 13 | 7 | 14 | 12 | 8 | 21 | 26 | 101 |
| % | 12.9 | 6.9 | 13.9 | 11.9 | 7.9 | 20.8 | 25.7 | 100 |

Table 1 showed that the largest portion of teacher’s population (25.7%) have shown some kind of transformation in their teaching methodology that is switching from traditional to modernistic.

50% of teachers who reported changes were from Hebron. Mr Hussan said:

 “--- *I can say that ICT has changed my teaching methodology, I started converting the material into questions and asked the students to look for the answers, then together we discussed the answers that students came up with in class using PowerPoint or the Facebook which encouraged my students to discuss and share*---“ (H No 39).

Table 1 also showed that 20.8% of teachers’ population claim that they gave their students a solid role to participate in the teaching and learning process.

The majority of those (70.1%) were from Nablus. Ms. Tamara said:

 *“---------I used blended learning in teaching electrical circuits to the 8th grade, I asked students to look for videos (from You Tube), to illustrate the way to build and assemble circuits , let them discover and solve the obstacles they face by themselves or by discussing the problem with them in class or through social media,------ repeating the procedure few times------one of the students’ average jumped from 65% at the beginning of the semester to 92% at the end----” (N No 8).*

Other participants claimed that ICT reduced the efforts used in preparation for the class, since they can reuse the same electronic material in many classes and for consecutive years with slight modifications. It also encouraged parents to be more involved in their children learning process, as one of the teachers explained:

*“-------students were assigned to search in the internet to look for relevant material to enrich educational subjects, ---parents were welcome to help.*

 *For example, in the religion class, they watched a movie called “Alresallah” “The Message”. It has information usually covered in few of the lessons --- watching the movie shortened the presentation time and decreased the instructional efforts ----“(J No1).*

However, 13 teachers out of 101 said that ICT, also decreased time of class preparation.

Ms. Duride confirmed this claim by saying:

*“-----I work at two different schools, teaching same subjects to same grades. In my teaching at the first school I used (computerized programs and LCD). In the second school regular methods were used (blackboard and chalk).*  *ICT shortened the time I spent in explanations -----“(N No23).*

13.9% of teachers showed enthusiasm towards using ICT, 42.9% of those were from Hebron. Mr. Suati who was involved in the Belgian project stated:

*“-----The Belgian project had a significant impact on directing my attention towards e-learning, ---- I started learning some programs to help in my teaching practices, ----I looked for programs from other countries to increase my knowledge and I feel I became an expert in e-learning. I even passed my knowledge to my colleagues and encouraged them to use it.----” (H No 25).*

 *“A friendly and un-stressful relation was built between me and my students”.* Ms. Suha said, as she explained:

*“------ In teaching math, I used and designed active video games, animations, created suitable stories using Photoshop,---- students helped me with their ideas , we (teacher and students) even talked and wrote stories about the subject ,----the students felt happy and relaxed --- I can say my relationship with my students become more friendly ----” ( N No7).*

The largest percentage of total behavior change occurred with Nablus and Hebron teachers, see fig 3*.*

**-Students’ Behaviors**:

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| --- |
| The changes in students’ academic behavior that were mentioned in the teachers’ story transcripts were detected, table 2 show a summary of that. |
| Table 2: Changes in Students’ Behavior

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region | Raise their thinking levels | Enhance achievement | Increase participation | Increased motivation | Enjoy learning | More discipline | Total | % |
|  |  No | % |  No | % |  No | % |  No | % |  No | % |  No |  No |  |  |
| Hebron | 8 | 23.5 | 17 | 32.1 | 14 | 25.5 | 5 | 20 | 3 | 11.5 | 4 | 30.7 | 51 | 24.7 |
| Bethlehem | 0 | 0 | 6 | 11.3 | 3 | 5.5 | 2 | 8 | 4 | 15.4 | 1 | 7.8 | 16 | 7.7 |
| Nablus | 10 | 29.5 | 7 | 13.2 | 22 | 40 | 8 | 32 | 9 | 34.7 | 2 | 15.4 | 58 | 28.3 |
| Ramallah | 9 | 26.5 | 18 | 34 | 13 | 23.5 | 5 | 20 | 6 | 23 | 4 | 30.7 | 55 | 26.7 |
| Jenin | 7 | 20.5 | 5 | 9.4 | 3 | 5.5 | 5 | 20 | 4 | 15.4 | 2 | 15.4 | 26 | 12.6 |
| SUM =206  | 34 | 53 | 55 | 25 | 26 | 13 | 206 |  |
| % | 16.5 | 25.7 | 26.7 | 12.1 | 12.6 | 6.4 |  | 100 |

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Table 2 showed that the impact of ICT used in instruction appeared greatest in 44.2% of students (appendix4), which is of course, from their teachers’ perspective. They are considered to be the most significant changes of all, Mr. Walid is a supervisor worked in Belgian project. He noticed in one of his visits to a classroom in a school in Hebron, that the teacher used ICT in all of the English subjects that he teaches, and added:

*“---- watching almost all students engaged actively in an English conversation really impressed me---” (H No2).*

Omar Abdelazez school principle shared Mr. Walid’s opinion and added:

*“—using GeoGebra, which is an Open Source software that provides a versatile tool for visualizing mathematical ideas has a stunning effect on students, I could see that on their faces when I shared a class with them---“ (N No 30”.*

The level of thinking rose for 34 students, they even developed some kind of analytical, critical and scientific thinking, and some showed deep understanding to the subjects. Teacher Amal from Hebron said:

*(-- students started finding solutions for their assignments by discovering and researching the internet, they started examining and breaking information into parts by identifying motives or causes. They also started to make inferences and find evidence to support generalizations. Hence deep understanding occurred ---” (Hebron No 14).*

Students showed some kind of reflection on difficult concepts, 25.7% students began to discuss topical issues after class using e-mail and Facebook, increased their achievements, Ms. Manal said”

*“Using ICT helped to raise the level of achievement ------- their test scores noticeably increased ----” (H No 8).*

In addition to the above, teachers recorded some other kind of changes in students’ behavior when ICT were used, such as increasing in class participation, and motivation, prevails happy yet disciplined class atmosphere, the majority of those teachers were from Nablus (28.3%). A Math teacher talked about her story implementing ICT in her Math class:

*“-----after implementing ICT in several Math classes, I noticed an increase in participation. I’ve heard one of the week students saying –now I understand-, they started liking my -so called- uneasy classes, and even more they enjoyed them. A student came to me after class and said – the class is so interesting, I wish all classes are presented this way—”. (N No 29)*

From the findings of the study reviled that only 21.6 % teachers showed some change in their teaching habits and behavior due to ICT (appendix 4), while the rest thinks that ICT does not lead to major differences. This is may be due to the way they are actually using ICT, or by their skills with regard to the use of ICT, and by their amount of experience with ICT (Smeets et al, 1999).

But the insufficient changing of teachers’ behavior after using ICT does not prevent changing in students’ behavior. Finding revealed that 44.2% of students showed some behavior changing in the way they think or perceive study. Abdulla (2008) stated that ICT has the potential to transform the nature of education. (Mbah, 2010) found that ICT has a positive impact on their study habits (81%). (Garrison and Kanuka, 2004) compared blended learning environment and traditional learning environment and observed that more effective and efficient learning occurs in blended learning environment and the success level of students is raised. On the other hand, (Leuven et al., 2004) stated that there is no evidence for a relationship between increased educational use of ICT and students’ performance.

Our findings unsurprisingly showed that the more changing in teachers behavior the more changing exist in students’ and contra versa . This is clear in Nablus district since the largest changing in teachers’ behavior occurred (33.6%) fig 3, were followed by the greatest changing in students’ (28.3.6%). Similar results appeared in Hebron district (32.7%, 24.7%) and to less extent in Jenin (10.9%, 12.6%). This fact is on line with Keely’s findings that ICT exhibited by teachers determine to a great extent their behavior in the classroom and, ultimately, will impact students behavior (Keeley, 2006).

However, this is not the case in Ramallah, where teachers’ changing were the lowest (10%), yet students’ changing were larger (26.7%). This means that although teachers’ behaviors have an effect on students’ behavior, but they are not the only reason of that affect. ICT could affect students’ behavior regardless of teachers’ changing.

To answer the second question of the study that is “***What are the current major trends in ICT and the 21st century skills in Palestinian schools?”***

The following discussion provides an analysis of the current major trends in ICT and the 21st century skills in Palestinian schools. Table 3 grouped six detected trends in the 21st century skills in Palestinian schools and ICT in teaching and learning participations.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 3 : Education Towards 21st Century skills

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Region | Students as a part of the teaching and learning | Collaborative learning | Learning by research | Active learning | Brain storming | Change learning methods | Total | % |
|  |  No | % |  No | % |  No | % |  No | % |  No | % |  No | % |  |  |
|  | Hebron | 4 | 44.3 | 2 | 50 | 1 | 50 | 3 | 75 | 0 | 0 | 4 | 28.6 | 14 | 31.1 |
| Bethlehem | 2 | 22.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 21.5 | 5 | 11.1 |
| Nablus | 2 | 22.2 | 2 | 50 | 1 | 50 | 0 | 0 | 10 | 83.4 | 4 | 28.6 | 19 | 42.2 |
| Ramallah | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 25 | 1 | 8.3 | 1 | 7.1 | 3 | 6.7 |
| Jenin | 1 | 11.1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8.3 | 2 | 14.2 | 4 | 8.9 |
| SUM =45 | 9 | 4 | 2 | 4 | 12 | 14 | 45 |  |

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|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| % | 20.0 | 8.9 | 4.4 | 8.9 | 26.7 |  31.1 |  100 |

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Table 3 showed that 31.1% of teachers tried to modify their teaching practice. Teachers from Hebron and Nablus applied most of the changing (28.6%, 28.6%) followed by Bethlehem, Jenin, while Ramallah came last (7.1%). This result is expected since Ramallah’s teachers have the least behavior changing (table 1).

The term teaching method refers to the general principles, pedagogy and management strategies used for classroom instruction. The choice of teaching method depends on what fits classroom demographic, subject area and teacher goals.

Ms. Nahed’s goal was to overcome the reluctance of the students for learning English,

*“----I had many teaching obstacles, simply, students don’t like English classes, I had to find a solution,---- I searched the net, I used video games, Facebook, drama, I let them play act -----” (B No 5).*

Other skills were also recorded in some Palestinian schools such as; brain storming learning (26.7%), students also stated to have a share in teaching and practice methodology (20%). Mr. Hamdan added

*“--- I implemented some educational theories, such as the multiple intelligence theory, and----, I allowed my students to have a bigger part in class, they argued over an idea, they worked as a team to search and discover the information,----- you are the teacher today -----I allowed them to take some responsibility, ----- some students showed some talents that were not noticed before -----” (R No 24).*

A moderate approach to other 21st skills was noticed, such as collaborative learning, and active learning. Principle Abu Gualala mentioned that she constantly encouraged teachers at school to use active learning, she said:

*“ --using the smart board, to implement e-Learning was a goal in my school, I assure you that teachers in my school encouraged students to get new ideas, --students worked as a team ,teachers sometimes asked them to look up information from the net by themselves, --using these methods we gained the community respect and trust, students from private schools asked to enroll in* our school”(N No5).

In addition, using ICT also had an impact on community; mainly parents. It strengthened the relation between parents and their children on one hand and parents with teachers and school on the other hand.

*“ – ICT strengthened relationship between me and my students and,---- we talked and chat through net and Facebook, even after they graduated from school, -----parents felt more satisfied with performance parameters ,----parents increased their moral and fund supports ----”(H No3).*

Table 4 summarizes the percentage of the community changes

 Table 4: Community

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Region | Student's-Parents involvement | Teachers-Students’ families involvement |  |  |
| No | % | No | % |  |  |
| Hebron | 3 | 33.4 | 2 | 40 | 5 | 37.7 |
| Bethlehem | 2 | 22.2 | 2 | 40 | 4 | 28.6 |
| Nablus | 1 | 11.1 | 0 | 0 | 1 | 7.1 |
| Ramallah | 2 | 22.2 | 1 | 20 | 3 | 21.4 |
| Jenin | 1 | 11.1 | 0 | 0 | 1 | 7.1 |
| SUM =14  | 9 | 5 | 14 |  |
| % | 64.3 | 35.7 |  | 100 |

Although the above results show some trends of the 21st century skills with the implementation of ICT, yet they are quite too little (9.6%) (Appendix 4).

Preparing students to be competitive, the nation needs an agenda that infuses 21st century skills into core academic subjects, this is not an either or, students can master 21st century skills while they learn reading, mathematics, science, writing and other school subjects. 21st century skills are the indispensable currency for participation, achievement and competitiveness in the global economy (Partnership Guide, 2008). Education policy makers widely accept that improved access to ICT in education can help individuals to compete in a global economy by creating a 21st century skilled work force and facilitating social mobility (Abu Ghazaleh, 2013).

To answer the last question “***What are the obstacles that face implementation of ICT in the Palestinian schools?*** Table 5 shows the major obstacles that teachers faced when implementing ICT.

Table 5: Obstacle

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Region | Big school's curriculum | Inappropriate or poor ICT infrastructure(school/ home | Some parents don’t approve | Harder to monitor | Not enough time | Lack of computer skills | TOTAL | % |
|  | No | % | No | % | No | % | No | % | No | % | No | % |  |  |
| Hebron | 0 | 0 | 10 | 31.2 | 1 | 50 | 2 | 28.5 | 3 | 42.9 | 4 | 16 | 20 | 19.9 |
| Bethlehem | 1 | 3.6 | 6 | 18.8 | 0 | 0 | 0 | 0 | 1 | 14.3 | 1 | 4 | 9 | 9.- |
| Nablus | 18 | 64.3 | 4 | 12.5 | 1 | 50 | 3 | 42.9 | 1 | 14.3 | 9 | 36 | 36 | 35.7 |
| Ramallah | 6 | 21.4 | 12 | 37.5 | 0 | 0 | 1 | 14.3 | 2 | 28.5 | 11 | 44 | 32 | 31.7 |
| Jenin | 3 | 10.7 | 0 | 0 | 0 | 0 | 1 | 14.3 | 0 | 0 | 0 | 0 | 4 | 4.0 |
| SUM101 | 28 | 32 | 2 | 7 | 7 | 25 | 101 |  |  |
| 100% | 27.7 | 31.7 | 2.0 | 6.9 | 6.9 | 24.8 |  | 100.0 |
|   |  |  |

Table 5 shows that inappropriate or poor ICT infrastructure at school or home, considered to be the major obstacle of all (31.7%). Ms. Azeia told a story of one low achiever student;

*“—she used to have a disciple problem , low achievement, but when she started using the computer in class she showed a positive change , unfortunately this girl has no computer at home because of a financial problem----”.( J No 19).*

Another technical problem concerning the low speed of using

*“----to implement the program, a high speed PC needed, this not the case in school --” (H No1).*

An economical problem also forms an obstacle, some classes do not have computers or internet access*.*

*“----each time we needed to use the computer we had to move the class to the computer room---“(B No1).*

It is also noticed that in some schools teachers themselves do not have good IT skills that allow them to use and monitor ICT at school (25%, 6.9%).

*“---I have satisfactory IT skills,.. still, I had to ask one of my colleges to help me design materials using flash programs---”(B No4).*

 Another teacher added

*“---we* nee*d an* educational technologists *at school,--- in case of any unexpected IT problem-----”(H No26)*

The second biggest obstacle was from teachers perspective; is the huge school material (27.7%). That consume time to convert (6.9%), and time to present

*“== The big load, no time, are main obstacles, ---” (R No 7)*

*Her friend agreed and commented;*

 *“ --- if my math load is reduced , I may have time to use more ICT in class—”(N No33).*

In very rare cases (2%), parents showed some kind of rejection to the idea that their children are using social media in learning. Despite the fact that Palestinian Ministry of Education and Higher Education (MoEHE) has ban its use in schools \*.

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\* Decision No. ((و ت ع / 7586 in 1 /12/2014

**Conclusion:**

The turn towards ICT based teaching-learning over the past 20 years is assumed to have revolutionized and revitalized the education sector tremendously (Maheswari and Arulchelvan, 2012). Palestinian educators realize the importance of adoption and integration of ICT in their teaching-learning process, and heavily investing in ICT as a learning tool and aim to exploit it to the maximum extent possible. Palestine is one of four Arab countries that have the largest share of teachers trained to teach subjects using ICT (Abu Gazalah, 2013).

The founding of this study revealed that; despite the efforts to implement ICT as a central tenet of school education, it has not yet been promoted to the desired level. Although teaching and learning process are gradually moving from lecture based teaching to teaching using ICT, yet most teachers and students make only limited use of ICT during their teaching and learning. Teachers think they have not been given the required training to use ICT effectively, beside the lack of time, the intense curriculum and lack of technical support. On the other hand, students are using ICT tools for many academic related activities, yet its usage is still limited.

Based on the above findings, it is recommended that educators pay more attention regarding the use of ICT resources as a major component in classroom teaching and to incorporate students in ICT based learning by effectively getting them involved.

**Appendix 1: The field researchers and Number of stories from districts.**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Field researcher** | **No of Stories** |  |
| **Hebron** | **Ramallah** | **Nablus** | **Jenin** | **Bethlehem** | **Total** |
| **1** | **Sara**  | 3 | 6 | 6 | ----- | 3 | 18 |
| **2** | **Fatema** | 6 | ----- | 5 | 5 | ----- | 16 |
| **3** | **Nabeel** | 11 | 5 | 5 | ---- | 4 | 25 |
| **4** | **Baha** | 3 | 3 | 3 | 1 | --- | 10 |
| **5** | **Abdelraoof** | 7 | --- | 5 | 6 | --- | 18 |
| **6** | **Rania**  | 3 | 2 | 5 | --- | --- | 10 |
| **7** | **Suad** | 5 | 6 | 5 | ---- | 3 | 19 |
| **8** | **Saba** | --- | 5 | 5 | 4 | --- | 14 |
| **9** | **Khaled** | --- | 8 | 5 | --- | --- | 13 |
| **10** | **Reiyad** | --- | 2 | 2 | 5 | --- | 9 |
| **11** | **Mohammed** | --- | 1 | --- | --- | --- | 1 |
|  | **Sum** | 38 | 38 | 46 | 21 | 10 | 153 |

**Appendix 2:**

<https://www.dropbox.com/s/0hoa0nh0mdz3ar5/153%20Full_Coding%20%20stories.rar?dl=0>

**Appendix 3:** <https://www.dropbox.com/s/dmp8gqzku1auby9/153%20coded%20stories_%20modified.xls?dl=0>

**Appendix 4: Summary of total changes.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Changes in Teachers’ Behavior | Changes in Students’ Behavior | Education Towards 21th Century Skills | Obstacle | Community | Total |
| SUM | 101 | 206 | 45 | 101 | 14 | 467 |
| % | 21.6 | 44.2 | 9.6 | 21.6 | 3.0 |

**Report 2: Data Analysis Report (L3-L4 Stories)**

1. ***Introduction***

*"The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn." Alvin Toffler points out,*

This report aims to explore the impact of initiatives on teaching and learning process at Palestinian schools,153 school teachers from five Palestinian districts (Hebron, Bethlehem, Ramallah, Jenin and Nablus) were interviewed and asked about their teaching practices and the use of 21st century tools to develop learning skills, that are in demand in the 21st century workplace; be able to think for themselves, solve problems, work in teams and lead others to success in the Knowledge Economy, how they use ICT which the tool that are essential to everyday life and workplace productivity where literacy defined by the program for Student Assessment (PISA) as "the interest, attitude and ability of individuals to appropriately use digital technology and communication tools to access, manage, integrate and evaluate information, construct new knowledge, and communicate with others in order to participate effectively in society."

**Methodology:**

The researcher (Najdi, 2015) drives major themes and subthemes that were repeated several times from the participants which are:

* **The vision (student-centered, 21st century skills)**
	+ Students as a part of the teaching and learning
	+ Collaborative learning
	+ Learning by research
	+ Active learning
	+ Brain storming
	+ Change learning methods
* **Teachers’ behavior:**
	+ Decreased teaching effort
	+ Teaching enthusiasm
	+ Collaboration with colleagues
	+ Social behavior
	+ -Student centered teaching
	+ -Change in teaching methods
* **Student behavior:**
	+ -Thinking levels
	+ Achievement
	+ Participation
	+ Motivation
	+ Enjoy learning
	+ Discipline
* **Obstacles:**
	+ Big school's curriculum
	+ Inappropriate or poor IT infrastructure (school/ home)
	+ Parents’ approval of using ICT
	+ Harder to monitor
	+ Not enough time
	+ Lack of computer skills
* **Communities**:
	+ Student's \_ parent’s involvement
	+ Teachers\_ families’ involvement

The stories analyzed, using Thematic Analysis then they reduced to 16 stories according to criteria developed to describe the significant of changes finally they reduced again to 10 stories depending on the story subject then they analyzed again to shed the light on the changes in every theme.

1. ***Main findings:***

There is kind of transformation in teacher behaviors and student behaviors due to the initiatives, teachers believe that active learning strategies reduce their effort inside the classrooms, and make teaching and learning process effective and enjoyable, they collaborate with each other to prepare lessons and kind of experience transfer happened between them, students become more friendly with their teachers and with each other’s, not achievable student and shy students participate in learning activities formally and non-formally, but teachers still need awareness toward 21st century skills to share the same vision, there should be policies to implement those skills in teaching and learning at the national level, curriculum should be modify, motivation system should be adopted to support teachers, training for teachers and students is essential, many obstacles face teacher high significant are, the school infrastructure, density of curriculum, school culture, and lack of ICT skills, to get the required change all communities should involve efficiently in implementing 21st century skills , curriculum need new design, this design should take into account the subject knowledge, learning methods and assessment.

**Discussion of major theme finding**:

* ***Education Towards 21thC skills***:

The 21st century skills are a set of abilities that students need to develop in order to succeed in the information age. It describes the skills, knowledge and expertise students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise and literacies (KSRED, 2010)

Stories read carefully to answer those questions:

Are the teachers learning strategies and practices prepare student for the 21st century? Is the Palestinian educational system incorporating 21st century into learning and teaching process?

From the stories we can see that there is some initiatives that encourage teachers to integrate 21st century skills into their classes, The role of teachers change dramatically, they used different learning strategies than the one they used before, they provide the student with opportunities to improve teaching and learning, The learning skills delivered to the student with some 21st century content and context, some teachers use the available content to make global awareness and civic literacy.

The teacher acts as subject matter expert, a facilitator for information they used active and flexible teaching strategies that integrate21st century skills, such as games, role play, drama, group work, they deploy ICT when it is possible in their teaching to attract the student and to facilitate the learning objective, student were able to think critically and creatively through problem solving activities.

*“We used technology and eLearning in many subject and different method and it is powerfully effect student personalities in terms of innovation, creativity, self-confidence, and information retention Hebron NO18”*

*“The difference was clear on performance of teachers that used technology in terms of diversity of teaching method and student central strategies” Ramallah No22*

Despite all of this there is no powerful vision that all teacher share about 21st century, there is no common language for understanding and promoting 21st century skills, there still need to teach and learn in a 21st century context, and content, there should be assessments that measure this change, all of this can’t be happened without policy at the level of the ministry.

*“What we need to achieve eLearning from my opinion as school director is to connect computer skill with 21st century for better outcomes” Bethlehem NO9*

*“ICT is the real change that happened in our school which effect positively the teaching and learning process inside and outside the school” Hebron 37”*

“While computers and digital technologies play a central role in the development and utilization of the skills, the more essential skills for 21st century learning and occupations relate not just to the application of technology but more importantly, to the ability to engage in independent critical thinking, and a high level of problem solving, often using technology” (Kivunja1, 2014)

The necessity of ICT skill is not arguable even the link to the other 21stcenturey skills is not clear, but it shouldn’t regarded as a separate set of skills, it should be embedded across core subjects and the other 21st century skills, the potential role of ICT as bridge between formal and informal learning environment should also be considered What students learn from and about ICT outside schools should be contemplated in the curriculum. In the same way, what students learn at the school about ICT should be transferred to their daily lives.

The curriculum is so intensive; 21st century should be delivered across and within the curriculum, so they need new design, this design should take into account the subject knowledge, learning methods and assessment.

***Teachers’ behavior***:

Teachers engage the students effectively in their learning process, they offer them opportunities to learn at their own pace, encourage collaborative work, they used active and adaptable learning strategies aided with technology to make the process more students centered and to meet students needs, their class rooms become more active, they encouraged the student to be more effective participant by designing activities that allow the students to discover knowledge on their own and that keeps them interested in the world that rapidly change and they begin to focus on student’s need, abilities and learning styles.

The teachers gave the students opportunities to Learn through collaboration which is one of the most effective forms of learning, Learning in groups enhances the scope of their learning and develops critical thinking, the collaborative activities was group project, small research using internet, Facebook activities, this kind of activities make the relations more friendly between students and teachers, and also between the students them self.

 *“ I suffer from student low achievement and no interaction but after I used videos and internet games and I conduct Facebook page to teach and learn English , noticeable interaction was in my classroom, student were so motivated to learn and do their exercises” Bethlehem No5*

*“there is noticeable change in teachers attitude in my school due to the eLearning initiative they now believe that eLearning help them invest their effort and motivate students, they enjoy their classes and begin to use different learning strategy such as drama and social network and the technology teacher in my school helps a lot in this” Bethlehem No9*

*“I transformed the whole topic of DNA into e-learning lesson via certain programs such as Flash. Such programs facilitate the comprehension of the different processes that occur in the DNA and Protein in such an interesting way that attracts students’ attention as well as increases their motivation to learn in a short time if compared with the previous situation. So, this helps greatly to solve a students’ problem that they kept asking about many times” Hebron NO18*

*“After using ICT in my classes there was improvement in students English language skills it was clear when I watch them talking with the foreigner visitor Hebron NO20 E”*

“*after this successful story that shows the impact of using social networks, I recommend to change the curriculum and design one which include content and activities using social network” Hebron No20-English*

*“Teachers collaborate effectively with each other and this dramatically shift for teacher who used to prepare their lessons individually and this is effect student performance and encourage them to work in groups Ramallah No22*

to transfer this experiences to all subjects and to spread the culture of active learning between all teachers at schools professional training program needed to give teachers opportunity to develop 21st century skills themselves and how to transfer these skills to the students into classrooms, since teacher’s practices, attitudes, beliefs, competences are important factors in the realization of change in teaching and learning.

***Student behavior:***

Students become more enthusiastic in the classrooms, they are actively engage in the their learning objective through group work using ICT, or games, drama, Facebook, and all learning strategies teacher used at the class room, active learning make Positive effect on student, the classroom become more entertaining, they acquire knowledge by themselves oriented responsibility of their learning, they become more productive and creative, cooperative and enjoyable atmosphere among them and between them and their teacher, shy students become more confidant and the non-achievable students improved in terms of achievement and participation in the classroom.

Many student don’t have internet access at their homes so they don’t have equal access to the technology that prevent them from getting advantage of social network or any internet activity outside the classroom despite that they have the chance to use the school lab but still there is no equity without equal access to the technology, beside student need ICT training and some knowledge about online security.

“*Results of using the e- learning: high achievement with the percentage from 20%-30%, communication through the Facebook increased motivation as the cases of two students in the 10th grade section (z) where their GBA in the first semester improved from 72%-73% to become in the second semester 89%-90%, increased interaction, students became more active participants in the class and towards learning the English language…Bethlehem NO5”*

*“Student were enthusiastic to search and learn through internet games and face book group, they participate effectively by asking question and participate on discussion group” Bethlehem No5*

*“We develop the assessment method in my school, we depend on student portfolio and research, students engage effectively in all school activities such as research, reading, dancing (DABKA), exhibitions” Bethlehem NO9*

*“after using technology and active learning strategy such as drama, Facebook, there is noticeable improvement in their achievement, there is a student in my school who transform from student who fail in some subject to be the first in her class during five years” Bethlehem No9*

*“There is increase in student achievement and less effort on teacher during the classes” Hebron No33M*

*“After using internet games and video in math classes I notice that the non-achievable student become to participate actively in the class through group” Nablus No29*

When students used drama to represent cell and acting as scientists and inventors this improve student achievement and reduce violence between students, the headmaster told me that those student are so uncontrollable in all classes except my classes and one of my student told me that he love the unite of genetics because he learn in different way” Ramallah No37.

New form of assessment should be adopted in schools to evaluate students, the assessment should consider what students are expected to achieve in terms of knowledge, skills, attitude and ethics.

***Obstacles***:

Many obstacles face the teachers who participated in the initiatives, The integration of 21st century skills entails important changes in the curriculum and the school culture, many teachers felt that the density of the curriculum prevent them from teaching using active strategies because of the time restrictions, the infrastructure of the school is poor, and teachers need support there is lack of ICT skills for teachers and students, and many families prevents their daughter from using internet especially Facebook, new teaching methods as well as stronger collaboration and knowledge sharing structures need to be developed at school level.

“*Some of the obstacles we faced while implementing eLearning: not all students have an account on the face book, crowded curriculum and shortage of time” Bethlehem NO5.*

 *“Despite all this, we still need organized training to overcome the difficulty of the shortage of ICT skills, our experiences were simple in facing this problem as explained previously. Another difficulty was the hatred of eLearning and moving towards new learning techniques, changed by training sessions, following up with the new learning knowledge as drama, building capacities, brain storming, group work” Bethlehem No9*.

“*One of the most important obstacles that we face in e-learning is the internet service that is not available in some houses because some families refuse the idea of internet access in their homes” Hebron No18.*

*“A lot of students don’t have account on Facebook and some parents refused to allow their daughters to use the computer for a long time” Hebron No20-egnlish*

*“There was no change on the educational system to support the acquisition of 21st century skills the ministry doesn’t make follow up for the projects “Hebron No37*

*“The difficulties are restricted in the inability to transfer the experience to the other classes due to the poor infrastructure and the density of the curriculum which need long time to be ” Junín No12 English*

*“Lack of training session for teachers and for students” Ramallah No22*

To overcome this obstacles, professional training needed for teacher to develop 21st century skills and to transfer these skills to the their classroom, awareness workshop needed for students family, ICT training and some knowledge about online security, new design for the curriculum, improvement for the infrastructure and To facilitate experience exchange and knowledge sharing between teachers, ongoing support structures should be strengthened so as to facilitate teacher collaboration and knowledge sharing, this could be happened through the ministry portal but there should be awareness workshop to encourage teacher collaboration and knowledge exchange.

**Communities:**

Communities are all the Key stakeholders in the implementation of 21st century skills, who are the policy makers(ministry of education),Parents and families, researchers, youth serving organizations, content providers, professional educational organizations, that The change of the outcomes of educational system entail collaboration between all those communities that effect this change, there was many initiative to enhance the teaching and learning process, all the outcomes of those initiative should be acknowledged and regarded as starting point of development of new initiatives, but most of those initiative are focus on teacher and consider him as corner stone’s to enhance learning outcomes, while there should Be combination of strategies at different levels (national policies, schools and classroom practices) and an active involvement of all stakeholders.

*“The effective communication with parents via school portal effect student achievement, the percentage of success arises from 45% to 60%” Jenin No1*

*“There is no internet access in some students houses because the parents don’t accept the idea of having internet at their houses” Hebron No18*

*“The ministry gave attention to 21st century project but it should be continues follow-up”* *Hebron No37*

*“I hope from ministry of education to work on spreading the culture of eLearning among teachers and parents and to provide all what required to facilitate the work of teachers” Nablus No29*

“*Teachers need professional ICT training to be able to design rapid eLearning material for students” Nablus No35-E*

We notice from stories that the lack of awareness of parents of 21st century skills effect teachers effort to implement these skills especially ICT skills, many families prevents their daughters from using internet especially Facebook or they refused to have internet access at their homes.

The curriculum need new design to consider the 21st century skills, teacher and student need more training and more awareness toward implement 21st century skills so all institute who take care of youth, and curriculum should be cooperate on publishing the required awareness.

**Conclusion:**

* The initiatives left set of successful stories, those stories are capable to be starter points for implementing 21 st century skills at schools, this implementation entail great effort at the level of the ministry and all the communities who are involved.
* High quality teacher training is required to develop teachers’ abilities to use various teaching methods and ICT tools to support student learning, and to create educational leadership at schools level.
* The schools infrastructure should be enhance with UP to date technology to facilitate teacher job.
* Create awareness about the important of 21stcentury skills, through encourage collaboration between different institute such as teacher training programs and university researchers and organize conferences and debate about the importance of 21st century skills among student and teachers.
* We need to Ensure that there is common language and understanding for 21st century between all communities, then assess accurately where the schools are, then develop a professional plan to integrate those skills across all subjects.
* Curriculum need new design to integrate all the skills needed 21st century skills and IT skills. This design should include clear and rigorous assessment.
* Technology should be regarded as a powerful learning resource that can support the acquisition of 21st century skills. ICT facilities ought to be made available in quantity and in quality at schools to guarantee the opportunities for technology use in the classrooms. So intensive ICT training should be conducted for teachers and for student.
1. In grounded theory, data analysis has a well-defined process that begins with basic description and moves from coding to conceptual ordering and then on to theorizing (Patton, 2002). [↑](#footnote-ref-1)
2. Ma'an News Agency Published on: 11/12/2014 (last update: 11/12/2014 time: 13:47) <http://maannews.net/Content.aspx?id=739389> [↑](#footnote-ref-2)