

## Kepler Kiziba Students Learning Time Loss Baseline

### Time frame

This baseline was set based on data corrected about electricity and internet for one month from August 8th.

### An Important definition

In this particular data collection activity, learning time lost means the amount of hours, minutes and seconds per week that students spent on campus without doing any of their academic activities due to electricity or/ and internet issues.

In order to find the baseline in terms of student learning time loss, we need to subtract the number of hours for which students had electricity and internet from the total number of hours students had access on campus.

Therefore, let's start with the total number of hours which students had access on campus from 8th August to 8th September.

### **Campus Accessibility**

- Students had access to campus from 7:30 am to 9 pm from Monday to Thursday.
  - Number of hours per day: 13h30min
  - Total number of hours for four days:  $13\text{h}30\text{min} \times 4 = 54\text{h}00\text{min}$
- On Friday, students can access campus from 7:30 am to 6pm.
  - Number of hours of campus access on Friday: 10h30min
- During weekend, they can access campus from 8:00 am to 8:30 pm. This means that the number of hours of access to campus for student during the week
  - Number of hours per day during weekend: 12h30min
  - Total number of house for Saturday and Sunday:  $12\text{h}30\text{min} \times 2 = 25\text{h}00\text{min}$

Total of hours students had access to campus:  $54\text{h}00\text{min} + 10\text{h}30\text{min} + 25\text{h}00\text{min} = \mathbf{89\text{h}30\text{min}}$  (see table 1). Since the campus opening and closing schedule does not change, the above total number of hours over which students had access on campus is constant.

**Table 1**

Days	How long campus is open?
Monday	13.5

Tuesday	13.5
Wednesday	13.5
Thursday	13.5
Friday	10.5
Saturday	12.5
Sunday	12.5
<b>Total [hours]</b>	<b>89.5</b>

Now that we have average number of hours over which students had access to campus in a week, we are going to calculate the number of hours over which students had both electricity and internet to conduct their academic activities. Thereafter, we will be able to calculate the average number of learning hours lost per week.

### **Electricity/Power & Internet availability**

At Kepler, students use laptops for their learning. So, they can only be effective if they have both power/electricity and internet. Therefore, we are going to calculate the number of hours over which students had both electricity and internet.

From August 8 to 8th September 2017, the generator schedule below was followed.

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>
8:00-10:00 AM	8:00-10:00 AM	8:00-10:00 AM	8:00-10:00 AM	8:00-10:00 AM		
1:00-3:00 PM	1:00-3:00 PM	1:00-3:00 PM	1:00-3:00 PM	1:00-3:00 PM		
6:00-8:00 PM	6:00-8:00 PM	6:00-8:00 PM	6:00-8:00 PM		6:00-8:00 PM	6:00-8:00 PM

### **How long was the generator running each day of the week?**

- We used to run our generator for 6 hours per day from Monday to Thursday
  - Total number of hours for four days:  $6h \times 4 = 24h$
- On Friday, we used to run the generator for 4 hours
- During weekend, we used to run the generator for 2 hours per day
  - So, we used to run the generator for  $2h \times 2 = 4h$

Therefore, the total number of hours we used to run the generator for:  $24h+4h+4h= 32h$  (See table 2).

**Table 2**

Days	How long campus is open?	How long do we run the generator?
Monday	13.5	6
Tuesday	13.5	6
Wednesday	13.5	6
Thursday	13.5	6
Friday	10.5	4
Saturday	12.5	2
Sunday	12.5	2
<b>Total [hours]</b>	<b>89.5</b>	<b>32</b>

**Important notes/assumptions:**

- During the time generator was on, students had both electricity and internet
- Students batteries could only resist for one hour after the generator is shot down
- During the day, on average the solar system could run the internet server for one hour after the generator is turned off.

All the above information are illustrated in the table below (Table 3)

**Table 3**

Days	How long campus is open?	How long do we run the generator?	How long does the old solar system power internet server?	How long do students laptops resist after the generator is turned off	How long students have both electricity and internet	Learning time loss [hours]

Monday	13.5	6	2	3	2	5.5
Tuesday	13.5	6	2	3	2	5.5
Wednesday	13.5	6	2	3	2	5.5
Thursday	13.5	6	2	3	2	5.5
Friday	10.5	4	2	2	2	4.5
Saturday	12.5	2	2	1	1	9.5
Sunday	12.5	2	2	1	1	9.5
<b>Total [hours]</b>	<b>89.5</b>	<b>32</b>	<b>14</b>	<b>16</b>	<b>12</b>	<b>45.5</b>

Now we can calculate how much learning time students lost per week, by subtracting total number of hours over which students had both internet and electricity from the total number of hours over which students had access to campus.

- The total number of hours of learning that students lost per week:  **$89.5h - (32h + 12h) = 45.5h$  (45h30min)**