

FIELD STUDY EXCERPTS ___ grade 2 class ___

SETUP: 2 surface pro at a time, on a carpet because the teacher thought the freedom of movement would encourage them to hold the tablet more comfortably and take full advantage of touch. The teacher was doing little workgroups and asked me to hand them the tablet and check with them/engaged. She observed and come check with them and with me multiple times.

Session Times (25min):

- 1) 8.35 to 9
- 2) 9 to 9.25

OBSERVATIONS

Note that “ ” does not refer to real quotes, just rephrased what they actually said

Timing (for session 1)

Arctic animation – 8.35

Fish – 8.41

Witch1- 8.47

Witch2- 8.50

Witch3 – 8.55

Bugs and issues:

Seem that we lost the history of what kids did, (important for the teacher) but does not matter much for this session as I have observed their interactions and can report to the teacher.

Animation bugged for Student 4

Surface #3 could not connect to internet, so used only 2 (which I think was a better setup anyway)

General observations:

Kids change position often: tablet on the floor mostly or on their lap

only student 3 uses the standing position

kids do not disengage with the app, only to look at me with questions or asks for help

other kids are very interested, coming by, looking at what it is

though the carpet is big, the two kids stay close side by side and then engage only in the first few exercises (really without goals), for witches, the engaged when stuck or finished or when other is stuck to explain to them. Do not seem frustrated when it does not work, maybe student 3 seemed a bit frustrated when student 4 finished and then they had to switch to another activity.

SESSION 1. Student 1 (F) & 2 (F)

S1 _____

Ex1

Found that you could drag animals

Found how to remove/add animals, used tapping on arrows, did not discover the top slider bar

Removed all animals after seeing it on S2

Prompt: top slider to change views

Don't understand what is happening in grouped view

"wow" as animals get resized and placed on histogram

"laugh" as animals get into squares

S2 watches as it happens

Prompt: how many pinguins?

Counts squares

Prompt: try to touch the squares to see what happens

See the line, but I don't think she does not make the connection with the count

<more unobserved interactions>

Asks if she can move to the next one

Discovered next by herself

Ex2

Looks at me to seek information on what to do (I was closer to S1 than S2)

Reads the text and start interacting with fish

Prompt: how many purple fish?

Uses bar chart, tap on bar and reads the label (6)

Discovers the yellow color in the other view

Prompt: and how many in the other view?

"Just three fish"

Prompt: so what happened?

"They got eaten" and laughed

Prompt: what is written here (pointing to the legend)

Reads

Prompt: what does that mean?

Does not know

Prompt: same questions with other fish

Did not get the legend, still same error

Prompt: remind her of the question (more red fish than others)

Remove the other color fish in the bar chart view

<more unobserved interactions>

Ex3

Moves to Ex3 when she sees S2 is doing another view

Spends time reading before interacting

Tries to interact by moving items directly inside the cauldron

S2 finished and then explains to her what to do

<she seems not to have noticed the button at the bottom>

Counts the items and then adjusts the bar

Get it right and move on

Ex4

<unobserved interactions>

I think she listened to what I said to S2 about the legend

She places all icons in neat lines

Then she counts the icons (moving her finger in almost tap twice on each icon to count)

Adjust bars

Plays with highlights

Finished and move on

Ex5

Spends time reading and notice the legend

"now it is three"

Adjusts bar and then highlight to check the count

Clarisse asks how is it going?

"Can I have it for my homework?"

Prompt: so what do you have to do here?

Answers correctly what she has to do including number of items per shape

Finishes successfully (not time to play around as S2 did, we switch kids)

S2_____

Ex1

Found that you could drag animals

Found how to remove/add animals, used sliding up/down, did not discover the top slider bar

Removed all animals

Watches S1

Plays with animation with 1 animal

Action: add animals to show it work

Prompt: how many pingouins?

Counts animals in histogram view

Action: remove a couple

Prompt: and now?

Answers without checking anything

<more unobserved interactions>

Ex2

Starts moving fish right away, organizes them into groups, neatly aligned

Add/remove fish so there are more red ones

Prompt: how many yellow spotted fish?

Counts the fish in the scatter view

Prompt: how much does it say in the other view?

Answer correctly without tapping or apparently counting (she got the axis reading down it seems)

Prompt: so why is there a different count?

Does not know

Prompt: shows the legend

She says ok

Prompt: can you remove one fish?

Shoes a half fish.

Prompt: so what is that?

Explain that it is one fish (she got the legend down it seems)

Prompt to S1 and S2: what are the numbers over there

S1> that is all the fish in there (shows the fish view)

<more unobserved interactions>

Ex3

Moves to Ex3 by herself (before S1, without asking)

<not observed but she got the idea very fast and is completing the bar chart>

Got the bubble going before S1 started to interact (S1 started by reading the text, slow reading)

Explains to S1 what to do

“here is the recipe for the potion, and you have to create it there (pointing the bar chart buttons)”

Moves to Ex4

Ex4

Does the same thing but cauldron does not work so she asks

Prompt: did you read everything?

Reads the legend

Then starts counting two things and adjusts bars

During that she somehow discovers the highlights and then taps everywhere

Finished the tasks, still plays with the bars/highlights afterwards

Moves to Ex5

Ex5

<unobserved interactions>

unsure if she read the legend first but I think so since she finishes it

prompt: why do you tap the bars?

“Its easier than count”

goes back to other views during the time S1 takes to finish (a minute or two)

then switch kids

SESSION 2. Student 3 (M) & 4 (F)

S3 _____

Ex1

Spends time reading before interacting, not sure what to do, asks me

Found how to drag and add/remove animals (using swipe)

Prompt: show him the slider with different views

Plays with it and found the histogram fun (wow, fun)

Prompt: how many pingouins?

S4 glanced at S3's screen and answers a number (random?)

S3 correct her and point to the bar in the bar chart and says, no the pingouin is this one, then tries to count the segments by tapping. Gets the number right

Action: show him the line at top of the bar

It shows the line to number 4 "yes! I was right"

It seems that he got the axis now

Ex2

Interact with fish, reads text

Prompt: asks him about the half fish on screen

Don't know

Prompt: show him the legend and what he thinks that means

Unclear, maybe the language?

Prompt: I briefly explain it to him

Seems to get it and interact with bar chart to adjust number of fish

Still interacting as S4 moves to next one

<more unobserved interactions>

Ex3

Reads the text first

Tries to move the icon into the cauldron

Then notice the bars

Starts adjusting the bar (and counting with his eyes)

S4 (already moved to Ex4) tells him how to do it

he replies he knows and go on

Ex4

Very diligent, reads well the text

Then place items in neat columns

Count the items out loud

Then create the corresponding bar

Asks me when its not working but then continues looking and find by himself the issue

sees that one bar is off (small bar and plenty of animal of that type in the other view) proceed to adjust it and makes it work

takes his time, count first, adjust bar and uses highlight to check his count

Ex5

Struggles with the counting of 3 and it may be possible that S4 is a bit stressing him out (she has finished already), also the class is bit louder as it gets close to the change of activity
Had to hand out the tablet without finishing.

S4 _____

Seems very familiar with computers, type the first letter of her name with upper case (the only one out of the 4)

Ex1

Found out the interactions by herself

Removed all animals but one moose

Action: adding some animals and show her the view slider

“Hey no! what are you doing?” then removes the one I added and add wolves instead

Press the slider but there are many bugs

<BUGS>

Action: get to histogram with squares and asks her to count

She briefly counted the animals before the transformed into squares and so answers without looking

Wants to move on to the next one.

Ex2

Does not read. Interacts with fish

Action: point to the legend and asks her to add/remove fish to see what happens

She seems not very interested and moves on to next one

Ex3

Tries to move the icon in the cauldron

Then notices the add/remove button and then get going with matching the count

I do not think she read the text

She tap on the bar/icons to see the interacting effect

Asks about the different in color (green/purple)

Prompt: I say this is the same element

Get the cauldron working (fast)

Shows it to S3 & S3 sees her excited and then moves on to next exercise

Ex4

Interact directly with the bars

After a while, asks for my help (icons are all overlapping)

Action: I move the icon to show there are overlapping

Did not notice you could move the icons

I think the previous view where you could not move them confused her

Then she organizes them in columns

Interact briefly with S3 starting with the cauldron and tells S3 that he needs to count the items

She asks why it is not working (did not read the legend)

Prompt: did you read the text?

She reads the text and start adjusting bars (she seems to count with her eyes without using fingers)

After one or two element, she just hacks the highlight

Grows bar big, then tap with her finger to see how they matches

When she sees the dashed, she get that it is too much and reduces the bar

Ex5

organizes icons in neat columns from the start

still does not seem to have read text

S3 has the cauldron puffing smoke (in Ex4) and shows to S4

S4 wants to reproduce and then make one bar grow real big

Did not work for her, so gives up and just proceed to her hacking technique

After a few bar, it does puff so she is happy (briefly) and shows to S3, then proceed to finish

DEBRIEF with Teacher_T1_____

STUDENT PREVIOUS KNOWLEDGE:

T1 reported that these 4 students had different learning profiles, but all were advanced in maths and T1 thought if these would not do great with the app, it was hopeless.

T1 confirmed students had no previous experience of charts taught by her (it is not in the French curriculum), however they may have been exposed in English, I have to check. T1 showed me a printed exercise in English where students have a tally chart they need to convert into a histogram (one tick mark should be drawn as a box in the empty chart). However, she seemed quite positive that the icon representing multiple element was not known to them.

COLLABORATION:

T1 had reserves regarding the collaborative nature of the technology. T1 mentioned the computers present in class led students to perform individual tasks and not collaborate much. Our app enabled collaboration when students discussed/show each other, T1 values this as it enables student to vocalize what they understood and really assess if they got the concept or not. T1 was surprised this collaboration happened given that each student had its own tablet.

Hypothesis: a possible reason this happens might be the first few activities that had no goal, when students asked me for guidance and I declined to say what was the goal, it forced the students to discuss with each other and explore and try to figure out what to do. I believe that initiated a collaboration/dialogue between students (for example they physically moved closer and looked at each other screens) that was maybe preserved during the rest of the exercises even when goals were clearly stated.

ENGAGEMENT:

T1 commented that 30 min was about the limit you could expect students to stay engaged for at this age. T1 confirmed that they were very engaged with the app and could likely have continued working with it. T1 is not sure if that is the particular app or rather the technology though. She did say that animations, touch interactions, themes and interactive visual feedback provided were very likely to play a crucial role in engagement.

IMPACT ON LEARNING PROCESS:

S1 is good in maths in a more traditional way (answering questions)

Hypothesis: this may be why S1 sought more guidance from me and her fellow student, also S1 seemed a bit more hesitant in trying and experimenting with the interface.

S2 is maybe less good in counting/answering questions but more creative regarding problem solving

Hypothesis: this may be why S2 was rather independent and discovered, explained things to her fellow student. S2 did start spontaneously clustering the fish in Ex2, she seemed to be in the "doing" mode.

S3 has usually trouble revising its strategy even when erroneous and needs substantial convincing by the teacher, T1 was surprised that S3 did revise its judgment and reasoning with the tool.

Hypothesis: The feedback provided by the app (with) was somehow convincing to him or the gamification just worked out.

S4 had issues earlier in the year as she was convinced she was good in maths but in fact, was not for solving and reasoning in problems. T1 mentioned she finds proving that she understood very important. *Hypothesis: this may be why S4 was impatient when no clear goal was stated, she did seem driven to have it right as fast as possible rather than display a genuine interest in understanding. She also did show to S3 when she was correct. This indicates that S4 may not really benefit from the open ended experience provided in Ex1 and Ex2 and should probably not be allowed to have the highlight or other hint, as she uses these to get to the end faster without any interest in understanding the underlying concept.*

IMPACT ON LEARNING:

From verbal comments/discussion between students, answers to punctual questions and interactions on the app and results, it appears that at least S1, S2, and S3 have understood the concept. It is unclear with S4 because of the “highlighting hack” used to get the answers correct, though S3 seemed to have understood the underlying principle as she explained to S4 in a few occasions.

However, quantifying/assessing the actual learning value of the app is extremely difficult (given previous knowledge and it is unclear whether they would not have learnt the same using printed material).

T1 will attempt to assess the actual learning by checking whether they can apply it to other activities/schemes successfully. We devise the following strategy:

- use printed material with different themes and ask questions/completion/creation
- have printed material filled out by students who did and did not yet have the app to possibly answer the following:
 - o learning concept: would they understand the concept using open ended printed material (as counterpart to our animation/coordinated views)?
 - o Learning concept: would they answer questions successfully?
 - o Learning process: would they revise their judgement like S3 if the printed material has feedback on the back?
 - o Engagement: would they stay concentrated on the material as they did for the app? Ask them question on which they prefer
 - o Collaboration: would they engage with each other if we place two side by side with printed material at a table?
- have student who had printed material first, then do the app, then maybe have a second round of printed material (pre-test / post-test)

ACTIVITY UPDATED (added a fish activity with a single fish)