


Future School 2030

 Supporting student learning towards 21st century skills
through digital storytelling with digital pen

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(brief introduction of
Word format report)



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Introduction



Objectives

A general study on learning and teaching in Finland and in China
with the focus of 21st century skills

Experimental study: how digital story-telling and digital pen
change students' learning processes and teachers' pedagogy

To provide suggestions and recommendations

for future schools with the focus of 21st century skills and

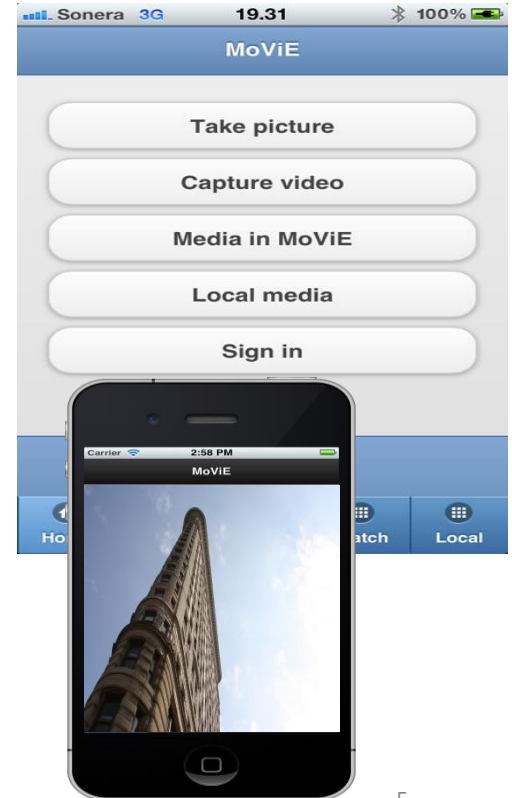
To publish a white paper & peer-reviewed articles in
international journals

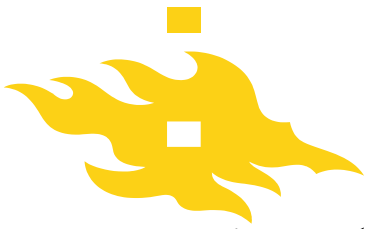


Digital storytelling is...

A new learning and teaching method

- Student centered knowledge creation
- Increased student motivation, engagement and effort
- Learning 21st century skills
- ICT technology





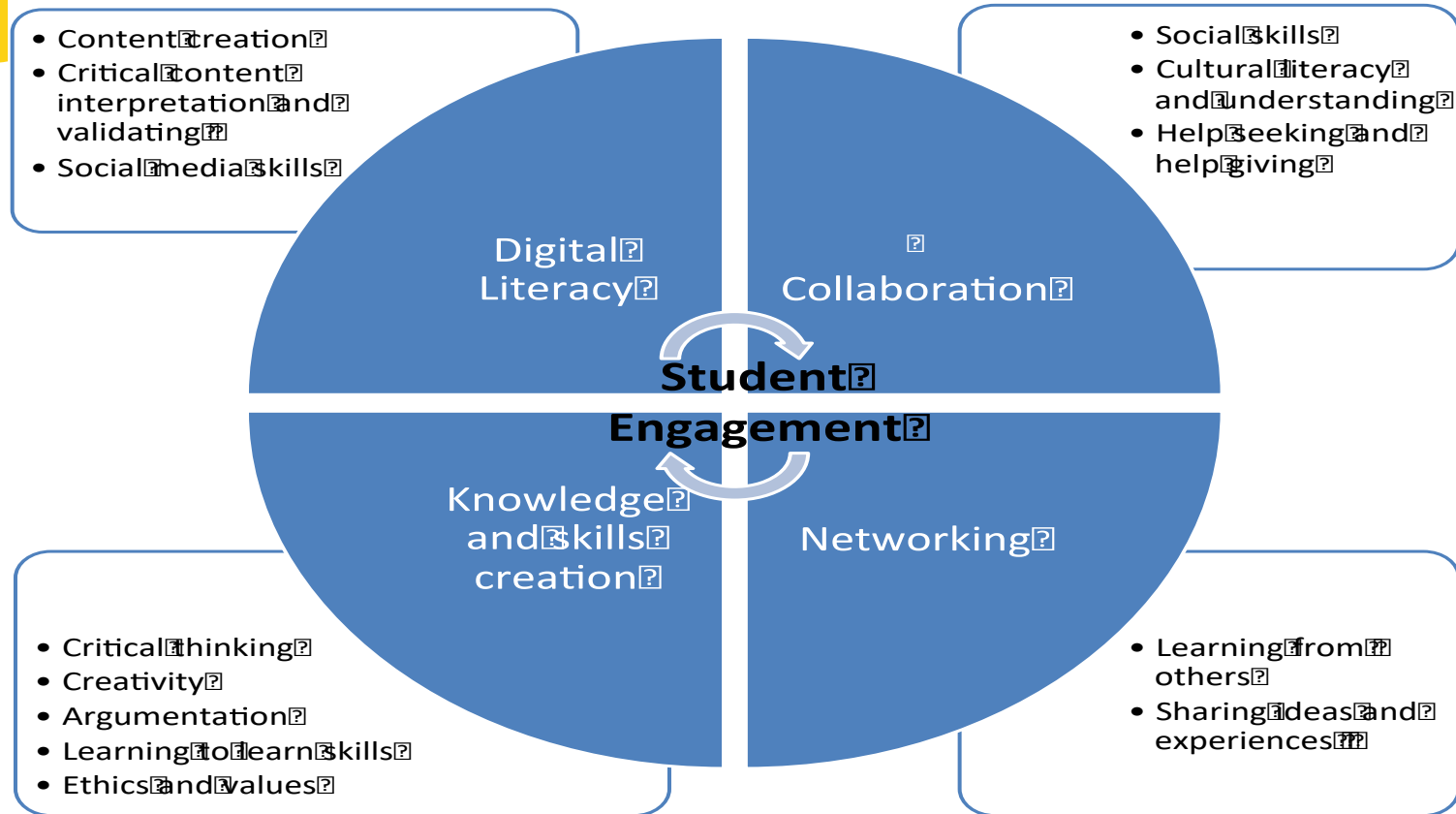
Digital pen is....

- Equipped with a pressure sensor and HD camera.
- Pressure sensor allows the HD camera to take 100 photos per second.
- Pressure data and speed are transferred to processor inside.
- All information can be outputted by Bluetooth or USB.





Through digital storytelling with Digital pen...





Research Progress



Research Questions

- What are the main elements of teaching and learning for future school with 21st century skills when moving towards student-driven knowledge creation?
- How does digital storytelling with digital pens support students' learning? **The focus of this presentation**
- How does digital storytelling with digital pens change teachers' pedagogy?
- How can learning analytics be integrated with learning processes and products when using digital storytelling with digital pens as learning tools?



The study cases in Finland and China

Time:	November - December 2016
Location:	Beijing & Helsinki
Participants:	4 th & 5 th grade students, their teachers (& student-teachers in the Finnish case)
Approach:	Student-driven knowledge creation
Tools or methods:	Digital technologies: digital pen, smartphones, tablets, computers
Outcomes:	21 st century skills and math learning



Digital Storytelling Learning Method Process

Understanding and preparing

Searching and Creating knowledge

Editing and Making digital story

Presenting, sharing and Reflecting

Teachers & students actively:

- Discuss the method
- Show example
- Form groups
- Agree the themes

Students in groups actively:

- Search the knowledge
- create the knowledge
- record the knowledge

Students actively:

- Edit and make the digital story

Students actively:

- Present and share the story
- Give and receive feedbacks
- Reflect on their learning

Research intervention with
Pre-questionnaire, observation, daily questionnaire, post-questionnaire and
interviewing teachers and students



Research Progress

Research proposal/plan (Done)

- Literature review
- Research questions, research methods etc.

Research design (Done)

- Questionnaire design
- Research methods

Data collection (Done)

- Quantitative data (questionnaire)
- Qualitative data (interviews and observations)

Data Analysis (Ongoing)

- Analysis method
- Data analysis

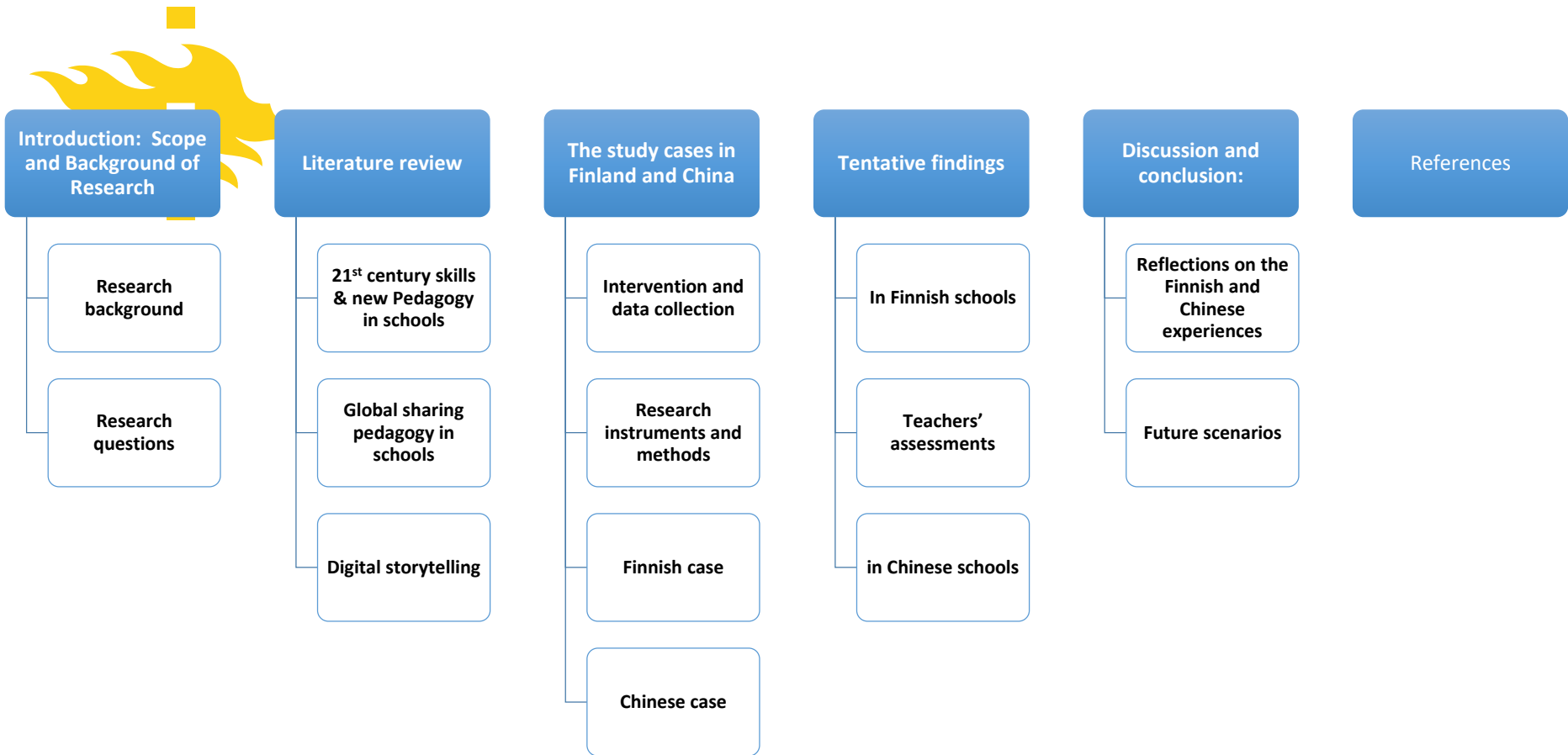
Writing the paper (Ongoing)

- Future school report
- Journal articles



Report

(brief introduction of Word format report)





Case Analysis

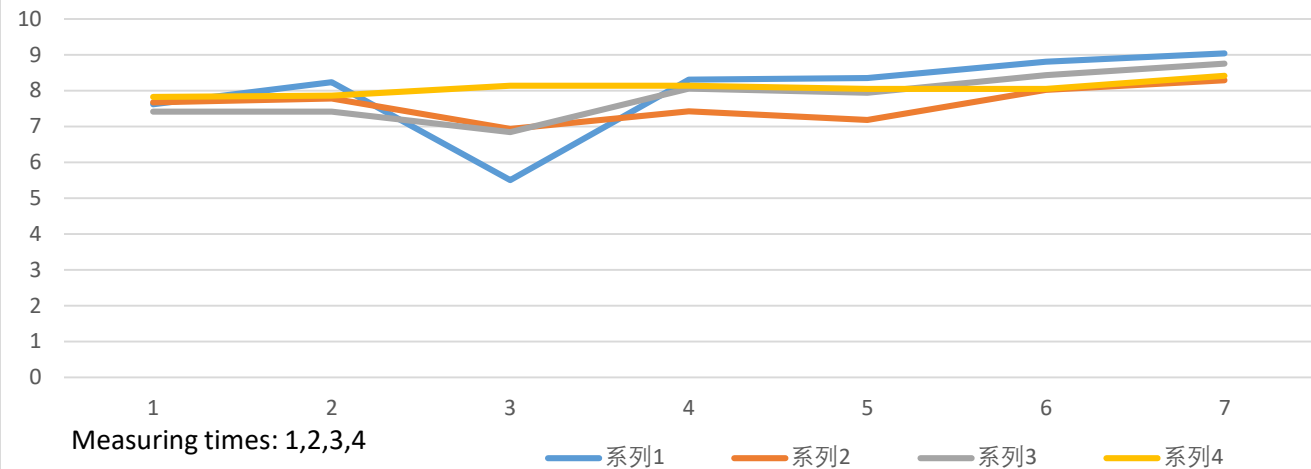


Tentative findings in the Finnish Schools

- Finnish students' self-evaluation about their learning during the Digital Storytelling Project
- Finnish students' self-evaluation about their learning outcomes after the Digital Storytelling Project
- Finnish students' self-evaluation about their math learning after the Digital Storytelling project
- Interviewing data and analysis from Finnish teachers

Time In DST Sessions		I learned new knowledge about math	I learned how maths relates to everyday life	I learned new skills such as recording and editing videos, finding new information from books or the Internet etc.	I learned how to work in a group with my classmates	I gained new ideas from my peers	In my opinion it was fun to do tasks that relate to digital storytelling	I worked hard during the lesson/phase of work
1.00	Mean	7.62	8.23	5.50	8.31	8.35	8.81	9.04
	N	26	26	26	26	26	26	26
	SD	3.12	2.56	3.92	2.24	2.13	2.17	1.82
2.00	Mean	7.67	7.78	6.93	7.42	7.18	8.02	8.29
	N	45	45	45	45	45	45	45
	SD	2.71	2.52	2.99	2.96	2.53	2.53	1.90
3.00	Mean	7.41	7.41	6.84	8.06	7.94	8.43	8.75
	N	69	69	69	69	69	69	69
	SD	2.66	2.74	2.92	2.38	2.62	2.38	1.72
4.00	Mean	7.82	7.86	8.14	8.14	8.05	8.05	8.41
	N	22	22	22	22	22	22	22
	SD	3.08	3.08	2.73	2.7	2.75	2.70	2.65
Total	Mean	7.49	7.62	6.76	7.85	7.73	8.24	8.53
	N	164	164	164	164	164	164	164
	SD	2.88	2.78	3.20	2.67	2.63	2.55	2.10

图表标题



1. I learned new knowledge about math
2. I learned how math relates to everyday life
3. I learned new skills such as recording and editing videos, finding new information from books or the Internet etc.
4. I learned how to work in a group with my classmates
5. I gained new ideas from my peers
6. In my opinion it was fun to do tasks that relate to digital storytelling
7. I worked hard during the lesson/phase of work

<i>I learned the following things during the storytelling project</i>	N	Mean	Std. Deviation
New things about geometric shapes.	43	7.58	2.332
How to calculate the surface areas of different geometric shapes.	43	7.47	2.763
How to find new or additional information for learning maths.	43	7.28	2.814
How to edit videos.	43	6.56	3.376
How to put in practice when making videos with my groupmates.	43	7.07	3.019
How to bring my own thoughts and ideas into a common group project.	43	7.67	2.542
How to solve problems I run into in the project	43	7.58	2.547
Learned how math is linked with daily life.	43	7.23	2.894

After the digital storytelling...	N	Mean	Std. Deviation
I enjoy maths more than before.	43	6.60	3.163
I want to work even harder in order to learn maths.	43	7.72	2.823
I see more clearly than before that maths is useful for me.	43	7.42	2.745
I am more certain that I can learn maths.	43	7.56	2.806
I have a better understanding of what I have learned in maths.	43	7.58	2.710
I feel more confident when talking about matters relating to maths with my classmates.	43	7.35	2.959

?

Question: What is your overall experience with the digital storytelling teaching method?

- Answer: *This teaching method combines many elements*
 - o *Search for information*
 - o *Put the story in a structured way*
 - o *Different way to present the contents, very creative*
 - o *Group work*
 - o *So many elements ...*

Question: How is digital storytelling useful?

- *It is quite useful. I believe that if a student can tell something, then they have learned it very well. By writing a story, tell a story, play or make a drama of the contents they have learned, I believe that they have really learned. It shows that the students are able to use the knowledge.*
- *In the group work, one child said that by discussing in the group, it helped them to get the product done.*
- *They are succeeding in doing (things). This makes them also feel proud of themselves.*
- *Motivation is very big in the project.*
- *The students are asking when it is next time to do the digital storytelling*



■ *Researcher: how is your digital story doing?*

Girl: It is interesting.

Researcher: was it difficult?

Girl: no. not difficult, maybe a little

Researcher: what have you learned by doing the digital story?

Girl: I learned something about math, and group work

Researcher: what did you learned in group work?

Girl: I learned how to ask other students in the group to join the activity and do things together.

J Researcher: Anything else have you learned?

Girl: I also learned how to take video and how to act in video.



Tentative findings in the Chinese Schools

- Chinese students' self-evaluation about their learning during the Digital Storytelling Project in Class A, B, C, and D

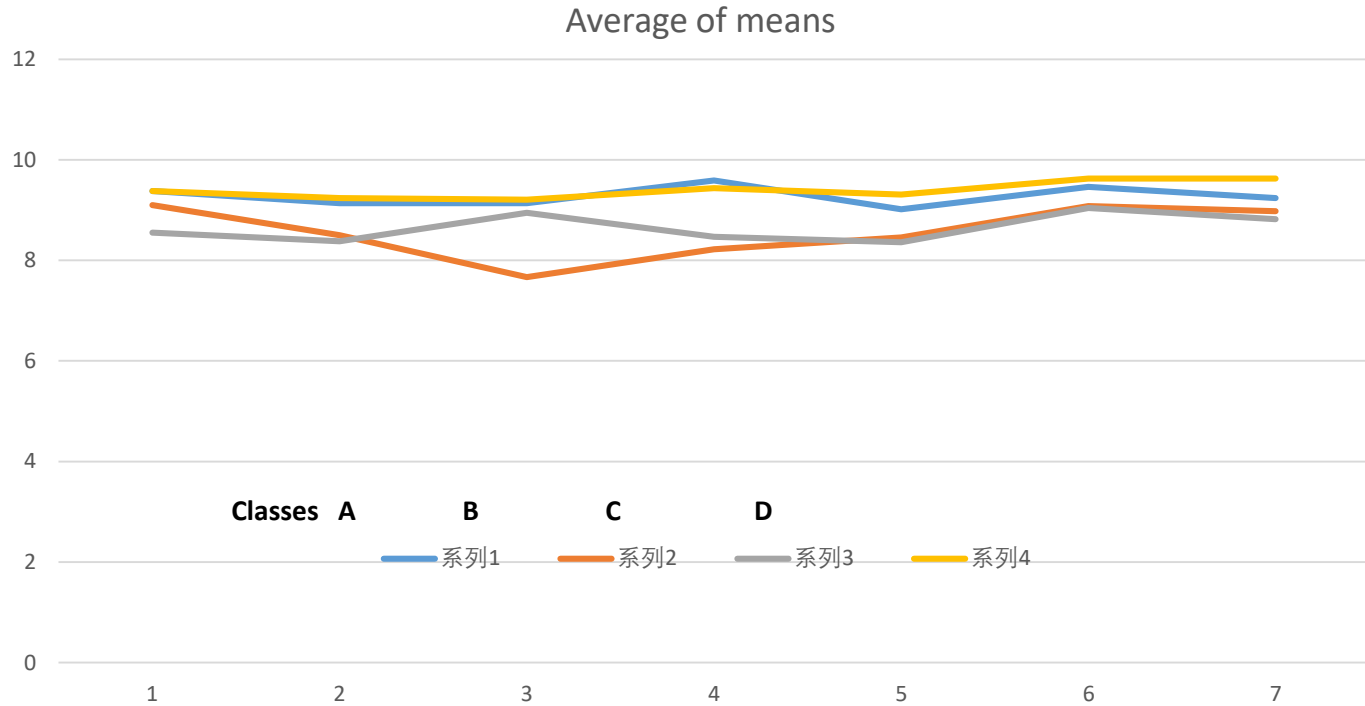
Time In DST Sessions		I learned new knowledge about math	I learned how maths relates to everyday life	I learned new skills such as recording and editing videos, finding new information from books or the Internet etc.	I learned how to work in a group with my classmates	I gained new ideas from my peers	In my opinion it was fun to do tasks that relate to digital storytelling	I worked hard during the lesson/phase of work
1	Mean	9.44	8.97	8.12	8.94	8.24	9.32	8.29
	N	34	34	34	34	34	34	34
	SD	.96	1.55	2.27	1.71	2.26	1.17	2.13
2	Mean	9.38	8.41	8.59	9.69	8.69	8.66	8.78
	N	32	32	32	32	32	32	32
	SD	1.21	2.63	2.33	.74	2.04	2.09	1.90
3	Mean	9.88	9.52	9.64	9.88	8.94	9.48	9.15
	N	33	33	33	33	33	33	33
	SD	.33	1.37	1.03	.33	2.32	1.35	1.68
4	Mean	9.06	8.74	9.09	9.63	9.00	9.60	9.57
	N	35	35	35	35	35	35	35
	SD	2.35	2.49	1.95	.73	1.53	.70	.98
5	Mean	9.37	9.31	9.69	9.60	9.54	9.80	9.66
	N	35	35	35	35	35	35	35
	SD	2.116	2.125	1.530	1.557	1.094	.531	1.235
6	Mean	8.94	9.52	9.48	9.76	9.36	9.85	9.73
	N	33	33	33	33	33	33	33
	SD	2.60	1.62	1.58	.90	1.85	.44	.76
7	Mean	9.67	9.56	9.37	9.67	9.41	9.48	9.52
	N	27	27	27	27	27	27	27
	SD	1.11	1.22	1.80	1.04	1.69	1.25	1.34
Total	Mean	9.38	9.14	9.14	9.59	9.02	9.46	9.24
	N	229	229	229	229	229	229	229
	Std. Deviation	1.74	1.96	1.89	1.13	1.89	1.23	1.56

Time In DST Sessions		I learned new knowledge about math	I learned how maths relates to everyday life	I learned new skills such as recording and editing videos, finding new information from books or the Internet etc.	I learned how to work in a group with my classmates	I gained new ideas from my peers	In my opinion it was fun to do tasks that relate to digital storytelling	I worked hard during the lesson/phase of work
1	Mean	9.21	8.62	8.24	7.97	7.50	9.09	8.59
	N	34	34	34	34	34	34	34
	SD	1.68	2.10	2.97	2.63	3.03	1.68	1.58
2	Mean	9.55	8.52	9.16	9.77	8.61	9.65	9.23
	N	31	31	31	31	31	31	31
	SD	1.46	2.34	1.78	.56	1.87	.95	1.56
3	Mean	9.27	9.18	8.94	9.52	9.09	9.36	9.21
	N	33	33	33	33	33	33	33
	SD	1.38	1.57	2.22	1.09	1.61	1.54	1.54
4	Mean	8.73	8.88	8.61	8.30	8.24	8.67	8.70
	N	33	33	33	33	33	33	33
	SD	2.28	1.93	2.44	2.73	2.55	2.31	2.04
5	Mean	8.44	8.32	8.52	8.76	7.76	9.20	8.88
	N	25	25	25	25	25	25	25
	SD	2.60	1.82	2.45	1.92	2.79	3.11	1.62
6	Mean	8.79	8.65	6.56	7.32	8.68	9.29	9.15
	N	34	34	34	34	34	34	34
	SD	2.10	2.06	3.48	3.15	2.16	1.22	1.42
7	Mean	9.15	8.35	7.41	8.15	8.94	8.71	9.24
	N	34	34	34	34	34	34	34
	SD	1.93	2.49	3.21	2.78	1.54	2.33	1.28
8	Mean	9.52	8.90	6.41	7.32	8.74	9.16	9.00
	N	31	31	31	31	31	31	31
	SD	.81	1.42	3.59	3.18	1.91	1.07	1.29
9	Mean	9.00	7.62	7.29	8.62	8.21	8.97	9.06
	N	34	34	34	34	34	34	34
	SD	1.89	2.86	3.41	2.19	2.68	1.71	2.03
10	Mean	9.26	7.97	5.82	6.68	8.74	8.82	8.76
	N	34	34	34	34	34	34	34
	SD	1.50	2.52	3.49	3.52	2.11	1.71	1.88
Total	Mean	9.10	8.50	7.67	8.22	8.46	9.08	8.98
	N	323	323	323	323	323	323	323
	SD	1.81	2.18	3.14	2.69	2.29	1.83	1.64

Time In DST Sessions		I learned new knowledge about math	I learned how maths relates to everyday life	I learned new skills such as recording and editing videos, finding new information from books or the Internet etc.	I learned how to work in a group with my classmates	I gained new ideas from my peers	In my opinion it was fun to do tasks that relate to digital storytelling	I worked hard during the lesson/phase of work
1	Mean	8.82	8.74	9.12	9.26	8.65	9.59	9.26
	N	34	34	34	34	34	34	34
	SD	1.817	1.912	1.47	1.189	1.704	1.019	1.189
2	Mean	9.34	8.66	9.11	8.86	9.03	9.43	9.20
	N	35	35	35	35	35	35	35
	SD	1.89	2.74	2.22	2.45	2.32	1.72	1.91
3	Mean	8.74	7.94	9.49	8.54	8.11	9.17	9.26
	N	35	35	35	35	35	35	35
	SD	2.54	3.05	1.61	3.11	3.12	2.55	2.15
4	Mean	6.47	6.91	6.53	6.62	6.74	7.38	7.15
	N	34	34	34	34	34	34	34
	SD	4.08	3.95	4.10	4.09	3.96	3.74	3.80
5	Mean	8.65	8.94	8.88	9.15	8.88	9.26	8.94
	N	34	34	34	34	34	34	34
	SD	2.53	2.01	2.29	1.84	2.06	1.97	2.23
6	Mean	9.34	9.24	8.38	8.38	8.83	9.45	9.10
	N	29	29	29	29	29	29	29
	SD	1.88	1.90	2.99	2.88	2.44	1.76	2.37
Total	Mean	8.55	8.38	8.95	8.47	8.36	9.04	8.82
	N	201	201	201	201	201	201	201
	SD	2.74	2.79	5.61	2.86	2.79	2.40	2.49

Time In DST Sessions		I learned new knowledge about math	I learned how maths relates to everyday life	I learned new skills such as recording and editing videos, finding new information from books or the Internet etc.	I learned how to work in a group with my classmates	I gained new ideas from my peers	In my opinion it was fun to do tasks that relate to digital storytelling	I worked hard during the lesson/phase of work
1	Mean	9.11	8.71	9.40	9.63	9.11	9.63	9.57
	N	35	35	35	35	35	35	35
	SD	1.57	1.62	1.17	.97	1.37	1.03	.92
2	Mean	9.26	8.97	9.23	9.26	9.29	9.60	9.31
	N	35	35	35	35	35	35	35
	SD	1.95	2.05	1.66	1.60	1.30	1.12	1.28
3	Mean	9.46	9.34	9.60	9.71	9.09	9.57	9.74
	N	35	35	35	35	35	35	35
	SD	1.6	1.50	1.3	1.10	1.74	1.01	.61
4	Mean	9.57	9.51	9.57	9.49	9.60	9.69	9.57
	N	35	35	35	35	35	35	35
	SD	1.58	1.52	1.29	1.17	1.01	.80	1.01
5	Mean	9.47	9.50	9.71	9.65	9.59	9.68	9.74
	N	34	34	34	34	34	34	34
	SD	1.69	1.42	1.24	1.07	.99	.88	.67
6	Mean	9.67	9.61	9.67	9.61	9.64	9.67	9.81
	N	36	36	36	36	36	36	36
	SD	1.53	1.42	1.22	1.18	1.07	1.07	.62
7	Mean	9.06	8.97	7.03	8.65	8.77	9.61	9.68
	N	31	31	31	31	31	31	31
	SD	2.28	2.21	3.52	2.58	2.13	.96	.83
Total	Mean	9.38	9.24	9.21	9.44	9.31	9.63	9.63
	N	241	241	241	241	241	241	241
	SD	1.742	1.702	1.940	1.465	1.425	.974	.881

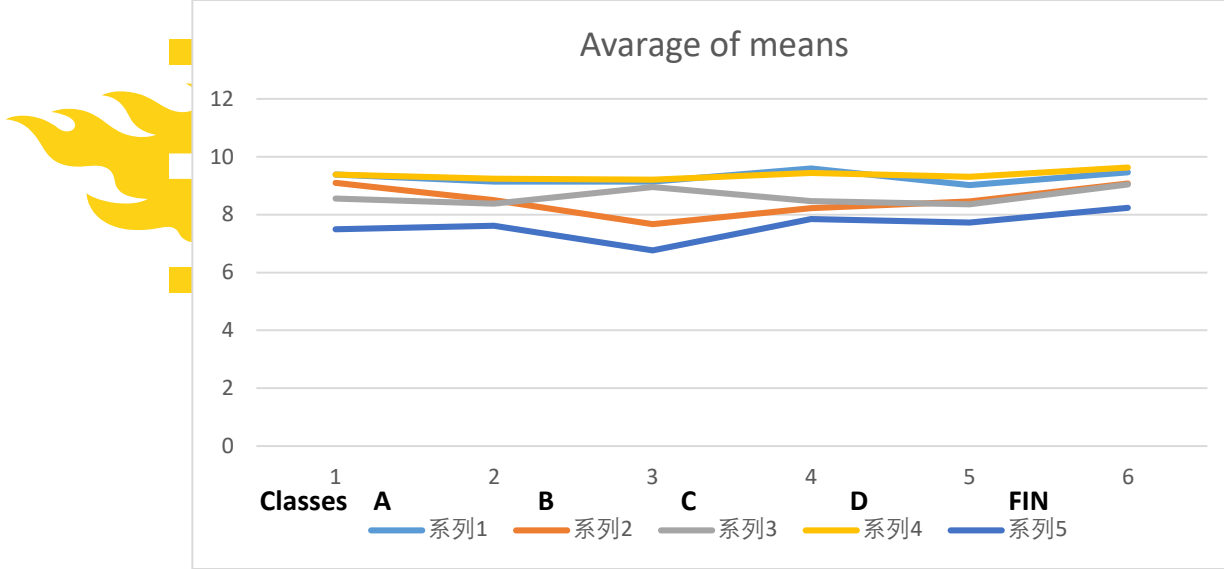
The average of learning outcomes in each variable in different time slots in Chinese classes.





Tentative findings in the Finnish and Chinese Schools

- Students learning outcomes in Chinese and Finnish classes
- Future scenarios



In both countries students' self-evaluated that digital story telling with digital pens had promoted their learning very successfully!

1. I learned new knowledge about math
2. I learned how math relates to everyday life
3. I learned new skills such as recording and editing videos, finding new information from books or the Internet etc.
4. I learned how to work in a group with my classmates
5. I gained new ideas from my peers
6. In my opinion it was fun to do tasks that relate to digital storytelling
7. I worked hard during the lesson/phase of work



Future Scenarios

- Multidisciplinary in learning
- Collaboration
- Students' reality and engagement













The background features abstract, overlapping shapes in shades of teal and blue. A large teal shape is on the left, overlapping a blue shape on the right. The text 'THANK YOU!' is positioned in the bottom right corner.

THANK YOU!