

Evaluation “Bring your own device” (BYOD)

Project “*Study Anytime Anyplace – Bring Your Own Device (SAA-BYOD)*” at Wageningen University & Research

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Background of the project

- Facilitate the ability to study independent of place and time
- Increase accessibility of courses around the world
- Enable flexibility for students and lecturers to decide where and when they want to learn
- Opportunity to reinforce personalised, qualitative WUR education for the increasing number of students and digitalisation of education



Research Team

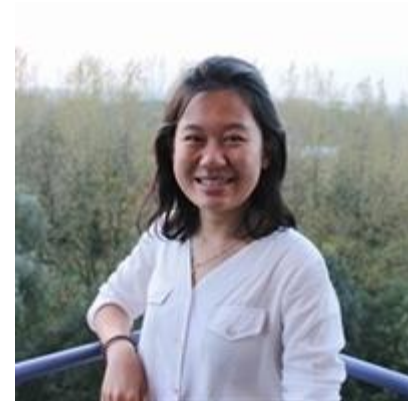
Education and Learning Sciences



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Aim & Rationale of Study



- Carry out an evaluation of BYOD from an objective position:
 - Collect and analyse students' experiences
 - Collect and analyse teachers' experiences

- Provide recommendations for the further implementation / future of BYOD

Research Questions

- To investigate the perceived effects of the current BYOD trials on students and teachers in order to provide recommendations for the future of BYOD
 - Technical issues
 - Students' learning and motivations
 - Teachers' planning and didactics for the course
 - Suggestions from students and teachers

Methodology (Data Collection)



MAT-15303
Statistics 1

GRS-10306
Introduction
to GIS

GRS-20306
Remote
Sensing

Students' Experiences

- Online survey on Qualtrics
- Focus Group Discussions



Teachers' Experiences

- Interviews with course coordinators and teachers involved



Overview of courses involved



MAT-15303 Statistics 1

- R locally installed
- 60+ students took part in trial; 2 teachers involved
- Data from students: survey (47), FGD (6)
- Data from teachers: Interview with 2 teachers + 1 package owner of R



GRS-20306 Remote Sensing

- Erdas Imagine locally installed
- 26 students took part in the trial; 2 teachers involved
- Data from students: Survey (20), FGD (9)
- Data from teachers: Interview with 2+1 teachers

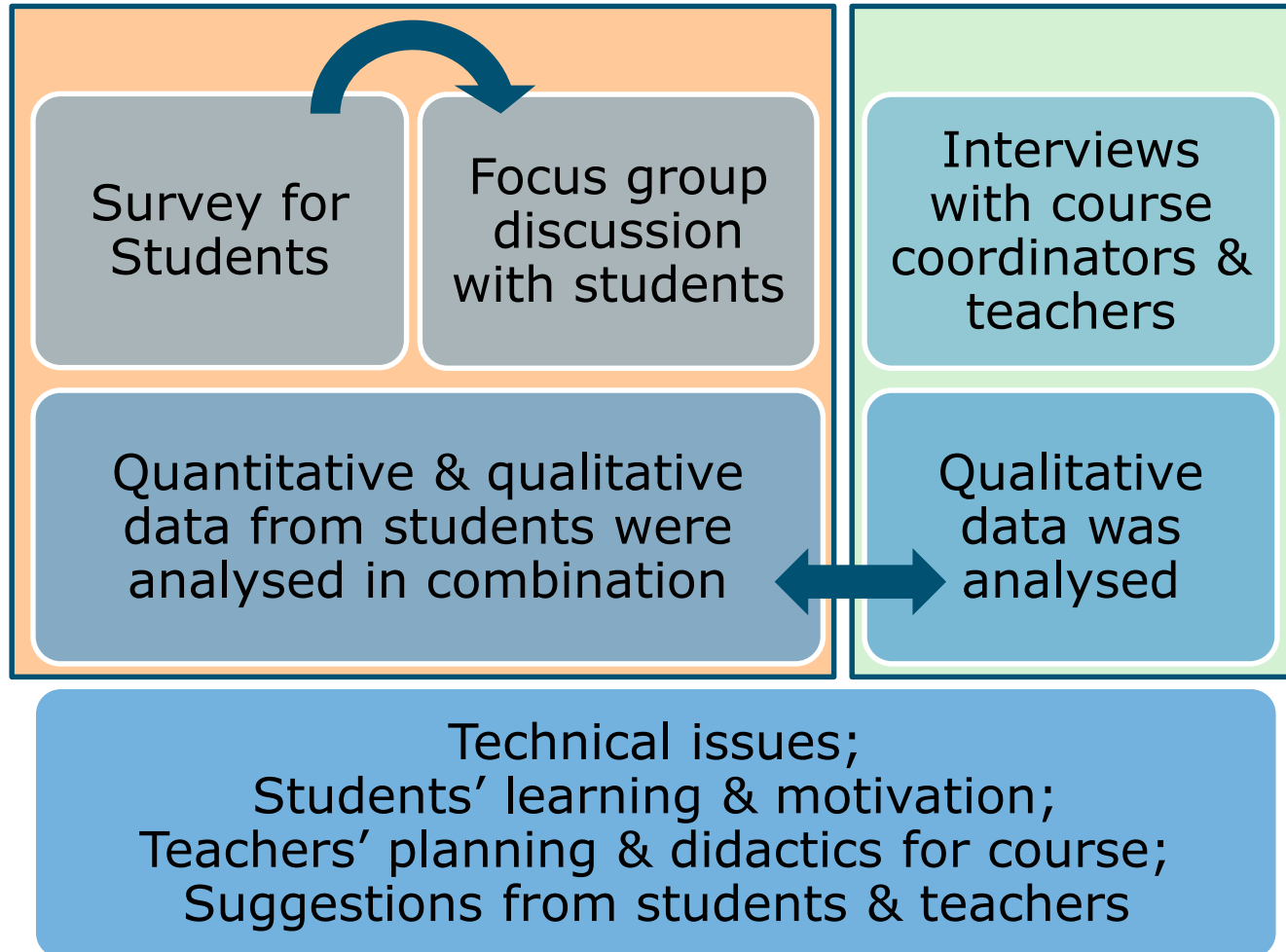


ArcGIS

GRS-10306 Introduction to GIS

- ArcGIS & GoogleEarth provided virtually
- 33 students took part in trial (33 → 24 → 9 → 3); 3 teachers involved
- Data from students: FGD (7)
- Data from teachers: Interview with 3 teachers

Methodology (Data Analysis)



BYOD evaluation results



Findings for Statistics (1/4)



■ Technical issues:

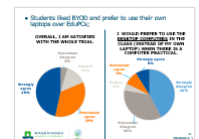
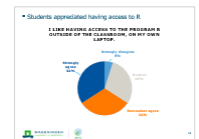
- Main problem seems to be installation issues;
- After installation was complete, there were no serious issues left.



Findings for Statistics (2/4)



- Students' learning and motivation:
 - Many students needed help with installation;
 - Not much time spent on R outside of class;
 - Most students feel comfortable to use R on their own for self-study;
 - Students appreciated having access to R;
 - Students liked BYOD and prefer to use their own laptops over EduPCs;
 - More individual work alongside cooperation.



Findings for Statistics (3/4)



- Teachers' planning & didactics for course:
 - Not all students had R installed by themselves, need time in practical for installation;
 - BYOD has consequences for didactics, set-up of course, educational materials, assignments, providing feedback etc.
 - Challenges with variety of laptops (screen size, language, posture (possible backaches), difficult to have overview, different laptops have different settings, encroaching into personal space).

Findings for Statistics (4/4)



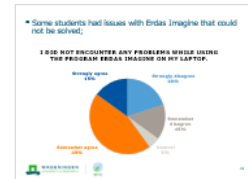
- Suggestions from students and teachers:
 - Have an “installation hour” before practical;
 - Continuity in support - send the same personnel for IT support;
 - Need for good communication with all parties involved before actual trial – IT department should have a meeting with people involved to align everyone so that they can help students with installation.

Findings for Remote Sensing (1/4)



■ Technical issues:

- Instructions to obtain software and installation were clear, easy and doable;
- Some students had issues with Erdas Imagine that could not be solved;
- Students encountered synchronization difficulties with OneDrive;
- Not possible to work simultaneously with OneDrive and Erdas Imagine;
- There was no wifi at some point, internet LAN cables in the room did not work.

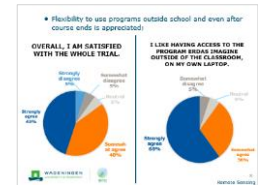


Findings for Remote Sensing (2/4)



■ Students' learning & motivation:

- Flexibility to use programs outside class and even after course ends is appreciated by students;
- When students finish assignments in class, there is no need to work on it outside class;
- BYOD provides flexibility to walk around in class with laptop to seek help from peers and teachers;
- There were students that never came to class but still submitted a report (they must have used Erdas Imagine at home);
- Teachers could not yet judge if BYOD had any effect on student's learning & motivation, nor the way students worked in pairs/groups.



• When students finish assignments in class, there is no need to work on it outside class:

Following the program, could you do any of these because you did not spend on the program. Please explain.

Value	Percentage	Percent	Valid Percent	Count	Percent
0	8	40.0	80.0	8	40.0
1	1	5.0	10.0	1	5.0
2	8	40.0	80.0	8	40.0
3	1	5.0	10.0	1	5.0
4	2	10.0	20.0	2	10.0
5	1	5.0	10.0	1	5.0
Total	10	50.0	100.0	10	50.0

Findings for Remote Sensing (3/4)



- Teachers' planning & didactics for course:
 - Challenges with variety of laptops (screen size, language, posture, difficult to have overview, different laptop different settings);
 - Power sockets in classroom used for BYOD were all at the side of the classroom;
 - Students had the option to switch back to eduPCs when their laptops did not work;
 - Teachers like to have students all in the same building during practicals;
 - Teachers want to stick to their current course concept and be able to monitor students' learning and progress.

Findings for Remote Sensing (4/4)



- Suggestions from students & teachers:
 - Place laptop risers, keyboards, mouse in BYOD rooms for students to borrow;
 - Students asked about possibility to obtain software directly instead of having to go through IT desk (GeoDesk);
 - BYOD rooms should have bigger screens to allow students to connect and put it on a larger screen;
 - Teachers advised against experimenting software during classes as the core goal is to provide students decent and proper education.

Findings for GIS (1/4)



■ Technical issues:

- Many difficulties with installation;
- Installation manual was incomplete;
- Problems with file/data sharing with OneDrive;
- Seems like connection problems with server were a main issue;
- Technical problems were present throughout the whole trial;
- Did not work on Mac laptops.

Findings for GIS (2/4)



- Students' learning & motivation:
 - Students had difficulties with installation → frustrated/worried when they were lagging behind;
 - Due to many technical problems, many students dropped out of trial;
 - Few students stayed on in the trial, they were still positive about the trial;
 - Teachers found it difficult to say if BYOD affected learning of students;
 - Students mentioned working in pairs on their own laptops would be the same as on EduPCs (Only that if it does not work on their laptops, it makes them stressed).

Findings for GIS (3/4)



- Teachers' planning & didactics for course:
 - "Trial was more like an unsuccessful IT test than an actual BYOD test for students";
 - Challenges with variety of laptops (screen size, language, posture, difficult to have overview, different laptop different settings);
 - BYOD has consequences for didactics, set-up of course, educational materials, assignments, providing feedback etc.

Findings for GIS (4/4)



- Suggestions from students & teachers:
 - Schedule an “installation hour” before practical;
 - Test it out on different laptops first to see what works and what does not work;
 - Design of BYOD rooms – set-up should be flexible and allow students and teachers to move freely;
 - Effective communication is needed as there are many parties involved (project team, IT people, teachers, scheduling, students);

Overall Conclusions

Technical issues

- Many installation issues & connection to server issues
- Having program locally is better than through a server

Students' Learning & motivations

- Students are generally positive about concept
- Difficult to say if BYOD affected students' learning
- BYOD might lead to more individual involvement next to cooperation

Overall Conclusions

Teachers' planning and didactics for the course:

- Untapped potential of BYOD – possibilities to use software outside class & students appreciate the accessibility
- Teachers foresee having to change aspects of course, especially to use the potential of BYOD
- Variety of laptops = many challenges for teachers (screen size, language, posture (backache), difficult to have overview, different laptop different settings, encroaching into personal space)
- BYOD should not be the basis for rostering department to assign smaller rooms to courses

Recommendations

- **Implement it only if it works** – Trials should only take place when confident that the programs will work, in order to not compromise on students' learning, otherwise it can cause stress on students and teachers. Do not change too many variables at the same time.
- **Flexible design of the BYOD rooms** - Flexibility for teachers and students to move around the class with different work stations, double screens, etc. should be offered (no fixed rows of tables)
- **Standardization of laptops** – If adopting BYOD, standardizing student laptops would be preferable. Students could be given the advice to purchase a specific laptop.

Recommendations

- **Make a clear distinction between SAA & BYOD** – BYOD might be a way to support Studying Anytime Anyplace (SAA), but most teachers do not want SAA as a general model for their courses (“might undermine the strength of Wageningen University”)
- **Use the present course set-up as the starting point for BYOD** – if implementing BYOD, do not force teachers beforehand to change course aspects they do not want to change (BYOD should facilitate existing courses)
- **Consider the possible added value of BYOD** – Stimulate teachers to think how the potential of BYOD could be used by stimulating students to use the software outside of class as well

Thank you for your attention!

Thoughts/Questions?

Contact:

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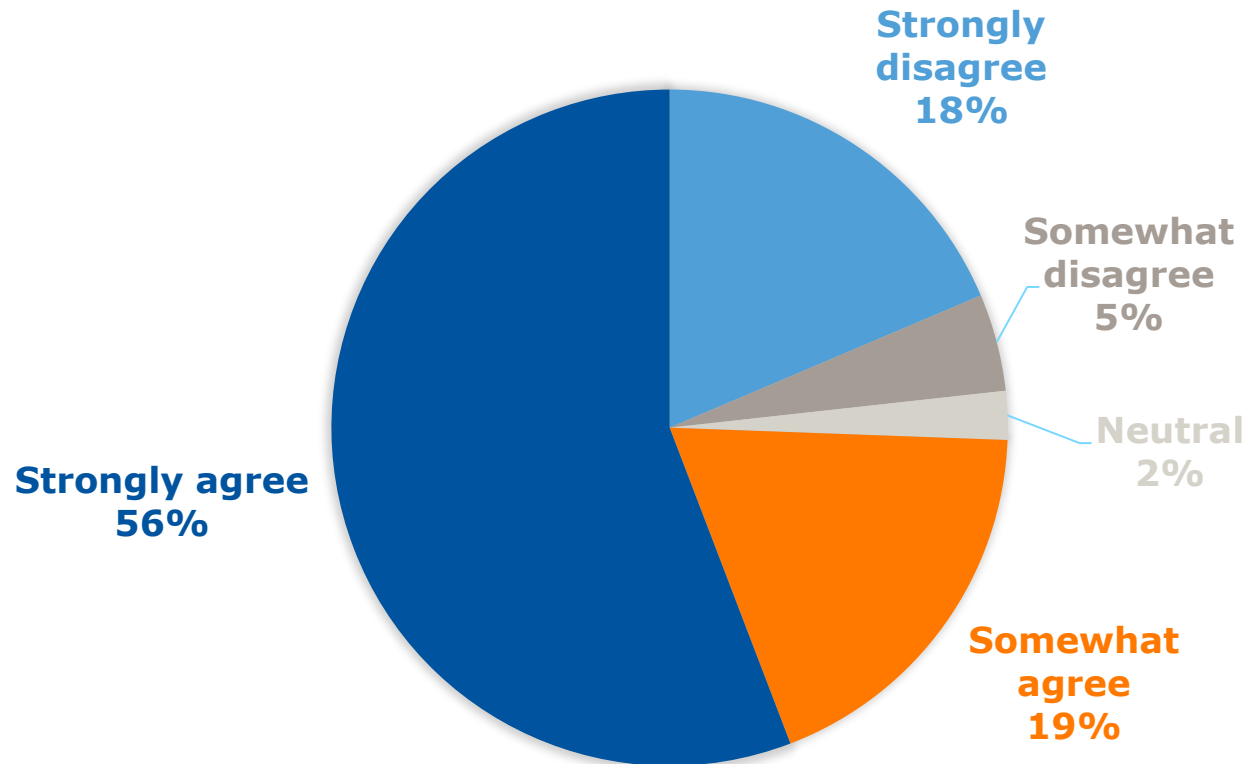
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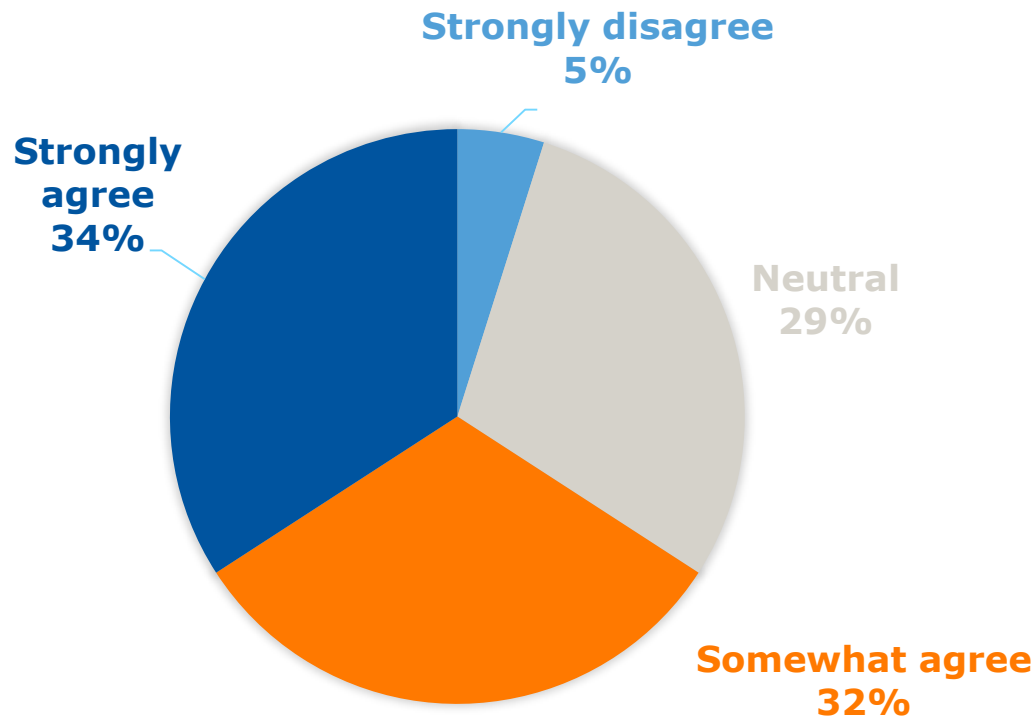
- Main problem seems to be installation issues

I SUCCEEDED IN INSTALLING THE PROGRAM R ON MY LAPTOP BY MYSELF BEFORE THE FIRST PRACTICAL.



- Students appreciated having access to R

**I LIKE HAVING ACCESS TO THE PROGRAM R
OUTSIDE OF THE CLASSROOM, ON MY OWN
LAPTOP.**



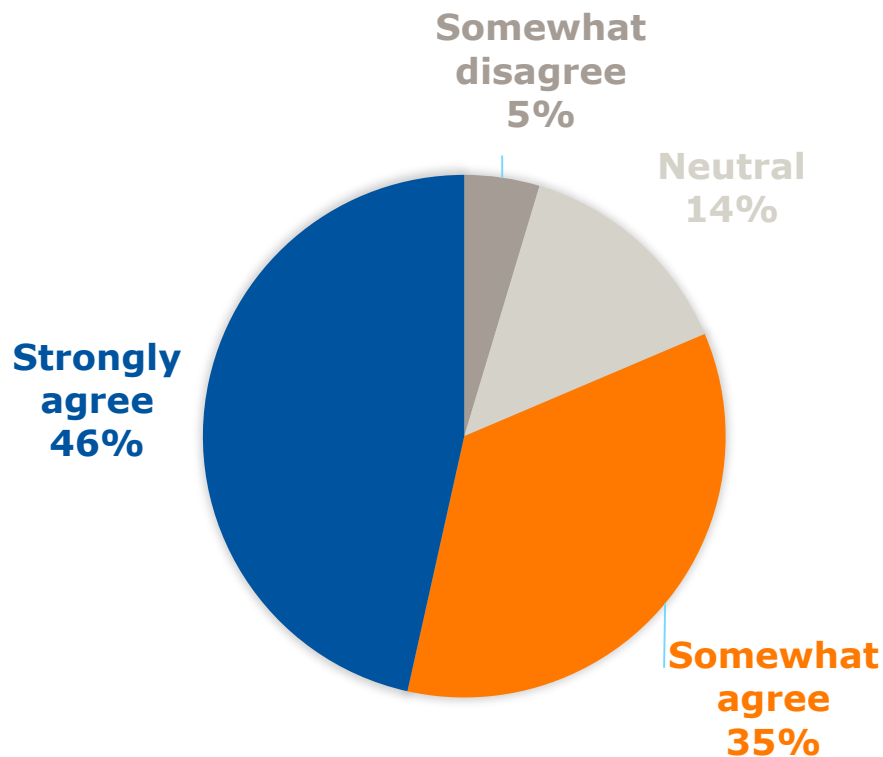
- Not much time spent on R outside of class;

Following the previous question, on average, how many of those hours per day did you spend on the program R outside of class?

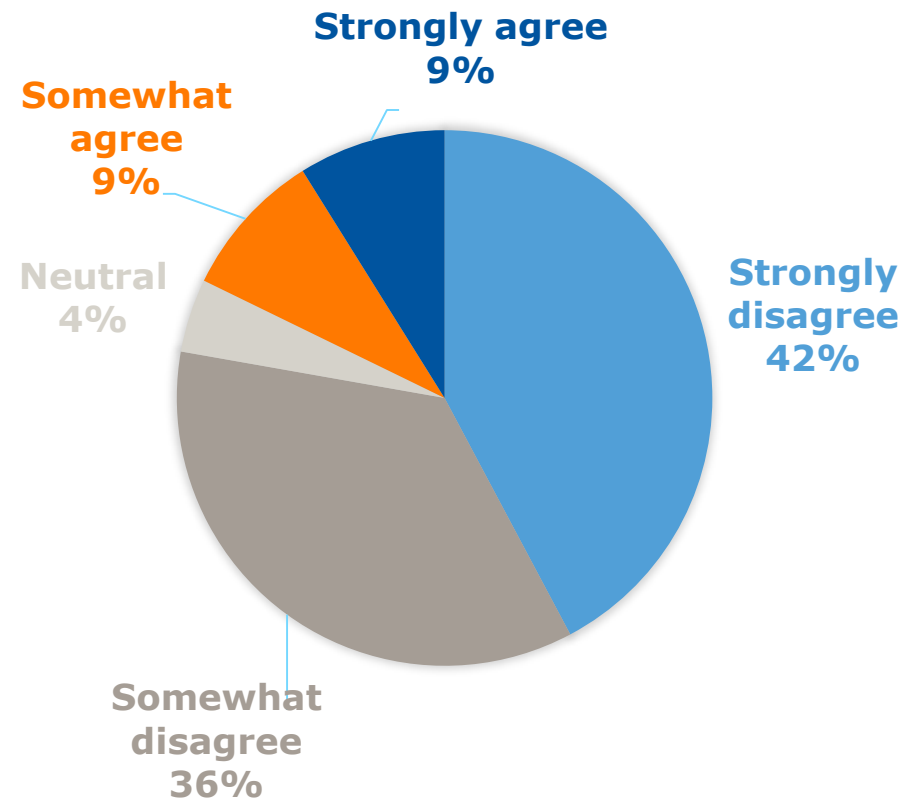
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	29	61.7	61.7	61.7
	0,25	1	2.1	2.1	63.8
	0,5	3	6.4	6.4	70.2
	0.25	1	2.1	2.1	72.3
	0.5	2	4.3	4.3	76.6
	1	4	8.5	8.5	85.1
	1 hour	1	2.1	2.1	87.2
	10 min	1	2.1	2.1	89.4
	2	3	6.4	6.4	95.7
	2h	1	2.1	2.1	97.9
	y~N(0.5;0.3)	1	2.1	2.1	100.0
	Total	47	100.0	100.0	

- Students liked BYOD and prefer to use their own laptops over EduPCs;

OVERALL, I AM SATISFIED WITH THE WHOLE TRIAL.

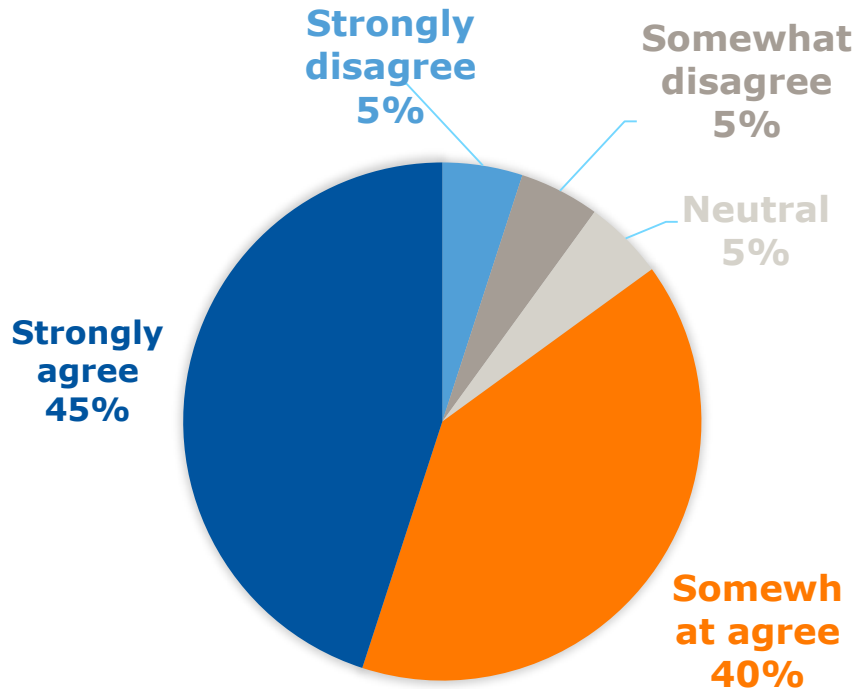


I WOULD PREFER TO USE THE DESKTOP COMPUTERS IN THE CLASS (INSTEAD OF MY OWN LAPTOP) WHEN THERE IS A COMPUTER PRACTICAL.

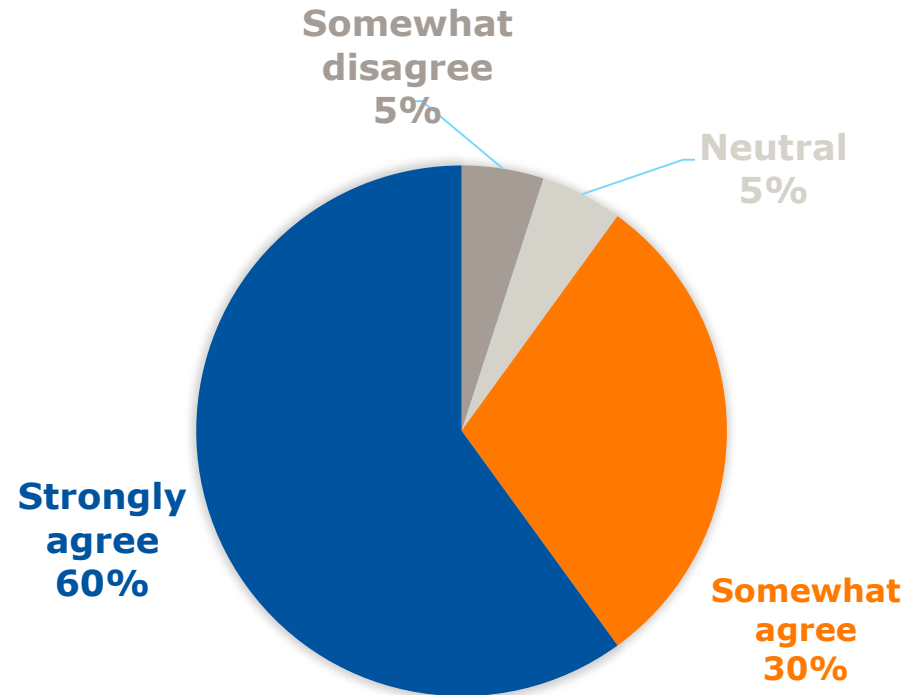


- Flexibility to use programs outside school and even after course ends is appreciated;

OVERALL, I AM SATISFIED WITH THE WHOLE TRIAL.



I LIKE HAVING ACCESS TO THE PROGRAM ERDAS IMAGINE OUTSIDE OF THE CLASSROOM, ON MY OWN LAPTOP.



- When students finish assignments in class, there is no need to work on it outside class;

Following the previous question, on average, how many of those hours per day did you spend on the program Erdas Imagine outside of class?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	8	40.0	40.0	40.0
	0-1	1	5.0	5.0	45.0
	0.1	1	5.0	5.0	50.0
	0.5	4	20.0	20.0	70.0
	0.8	1	5.0	5.0	75.0
	1	2	10.0	10.0	85.0
	1-2	1	5.0	5.0	90.0
	3	1	5.0	5.0	95.0
	half	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

- Some students had issues with Erdas Imagine that could not be solved;

I DID NOT ENCOUNTER ANY PROBLEMS WHILE USING THE PROGRAM ERDAS IMAGINE ON MY LAPTOP.

