Digital learning and Assessment

Professor Denise Whitelock
The Open University
Denise.whitelock@open.ac.uk

The Open University

Students

Students' feelings about Assessment

The Open University

Denise Whitelock Coventry 2019

2

Students

Students' feelings about Assessment

www.storiesabout.com
www.storiesabout.com/creativepdp
c.mckillop@rgu.ac.uk

Denise Whitelock Coventry 2019

3

Awarding Bodies

The e-Assessment and automatic feedback Challenge

- Constructivist Learning – Push
- Institutional reliability and accountability – Pull

Denise Whitelock Coventry 2019

4

SAFeSEA: Supportive Automated Feedback for Short Essay Answers

An automated tool supporting

online writing and assessment of essays providing

accurate targeted feedback

EPSRC Engineering and Physical Sciences Research Council

University of Oxford

The Open University

SAFeSEA

Professor Denise Whitelock
Professor John Richardson

Professor Stephen Pulman

Denise Whitelock Coventry 2019

Researchers

About SAFeSEA

The Open University

- No tutor support for drafts of first assignment
- Reduce dropout rate with automatic feedback?
- Effect of summaristion
- What are the beneficial factors?
- Correlate measures of learner activity and essay improvement
- http://www.open.ac.uk/iet/main/research-innovation/research-projects/supportive-automated-feedback-short-essay-answers

Denise Whitelock Coventry 2019

6

Researchers

OpenEssayist: What it tells you

- The system's focus is to present **summaries of students' own work** in different ways, to encourage them to reflect constructively on what they have written.
- In other words Open Essayist tells them from its analysis what are the most important or key points in their essay. They can then think about whether that was what they **intended to emphasise** in their essay. If not then they can make the appropriate changes.
- A very important aspect of the OpenEssayist system is that it will **not tell students what to write**, or how to rewrite sections of their essay, or even what is correct or incorrect in their essay.

Denise Whitelock Coventry 2019

7

Researchers

Grades and use of OpenEssayist with H817

•Used by MAODE students

•Positive correlations

1. Grades for Essay 1 and number of drafts (r=+0.41)
2. Number of site visits and number of drafts (r=+0.65)
3. Number of visits and grade for Essay 2 was significant one tailed test (r=+0.5)
4. Mean grade for overall module for students in cohort who used OpenEssayist (64.2) and students in previous cohort (53.7) (p=0.4)

Denise Whitelock Coventry 2019

8

What do the components of a good essay look like when analysed by Open Essayist?

The Open University

Stanford University Boothe Prize essay

Denise Whitelock Coventry 2019

9

OU Essay awarded high grade

The Open University

Denise Whitelock Coventry 2019

OU essay awarded low grade

Denise Whitelock Coventry 2019

Researchers

Rainbow diagrams related to mark awarded

- Multivariate analysis of variance on marks awarded to 45 students
- Submitted two essays
- Rainbow diagrams produced from these essays and rated as high, medium or low attainment
- Covariate showed a significant relationship with the marks
- $F(1, 43) = 5.92$, $p = .01$ using a directional test
- Essays rated as high would be expected to receive 8.56 percentage points more than essays rated as medium
- 17.2 percentage points higher than essays rated from rainbow diagrams as low

Denise Whitelock Coventry 2019

12

Digital assessment and plagiarism

Where is the trust ?

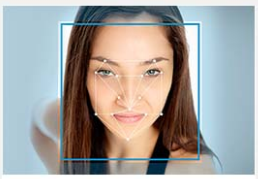
- If we could be certain that work submitted was the student's own
- **We would be freed from one of the main constraints in the assessment of online distance learners**
- Opportunities for more varied and enriched assessment would increase

Academic integrity…

13

TeSLA is a step towards this goal http://tesla-project.eu/

The TeSLA system Incorporates several tools within a VLE…



Face recognition and anti-spoofing

Voice recognition and anti-spoofing

Plagiarism, and authorship validation.

Keystroke patterns

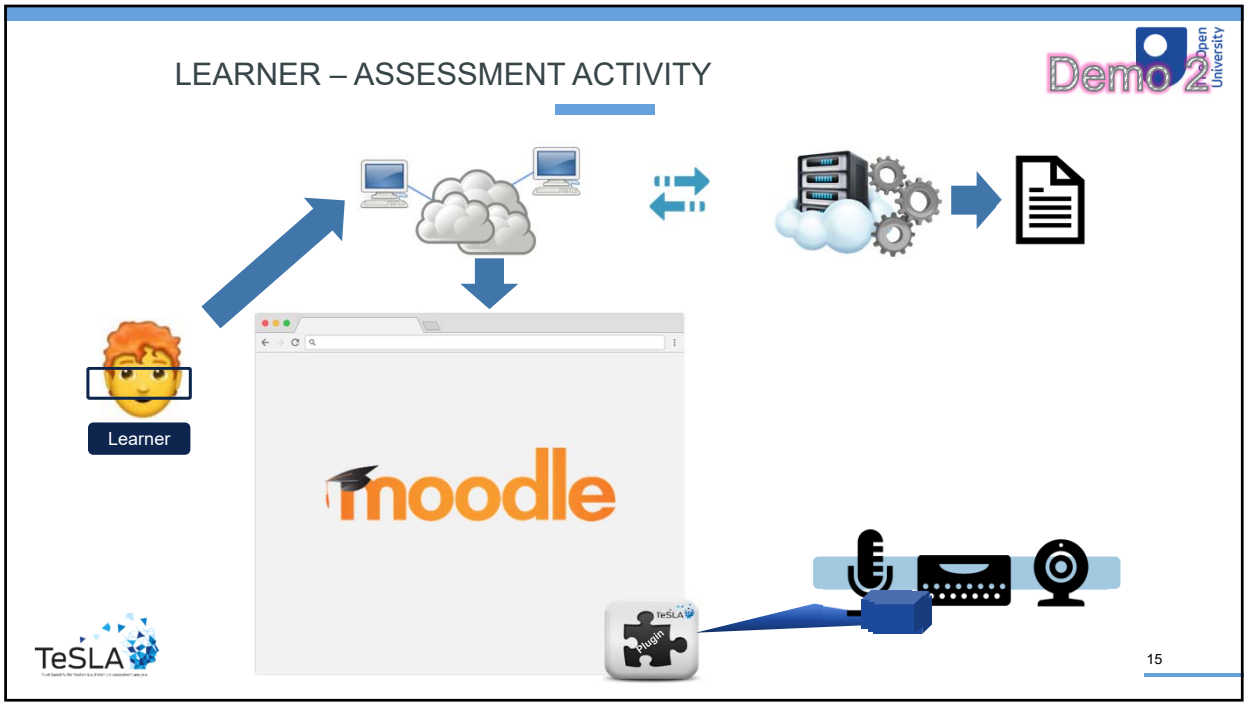
Face recognition

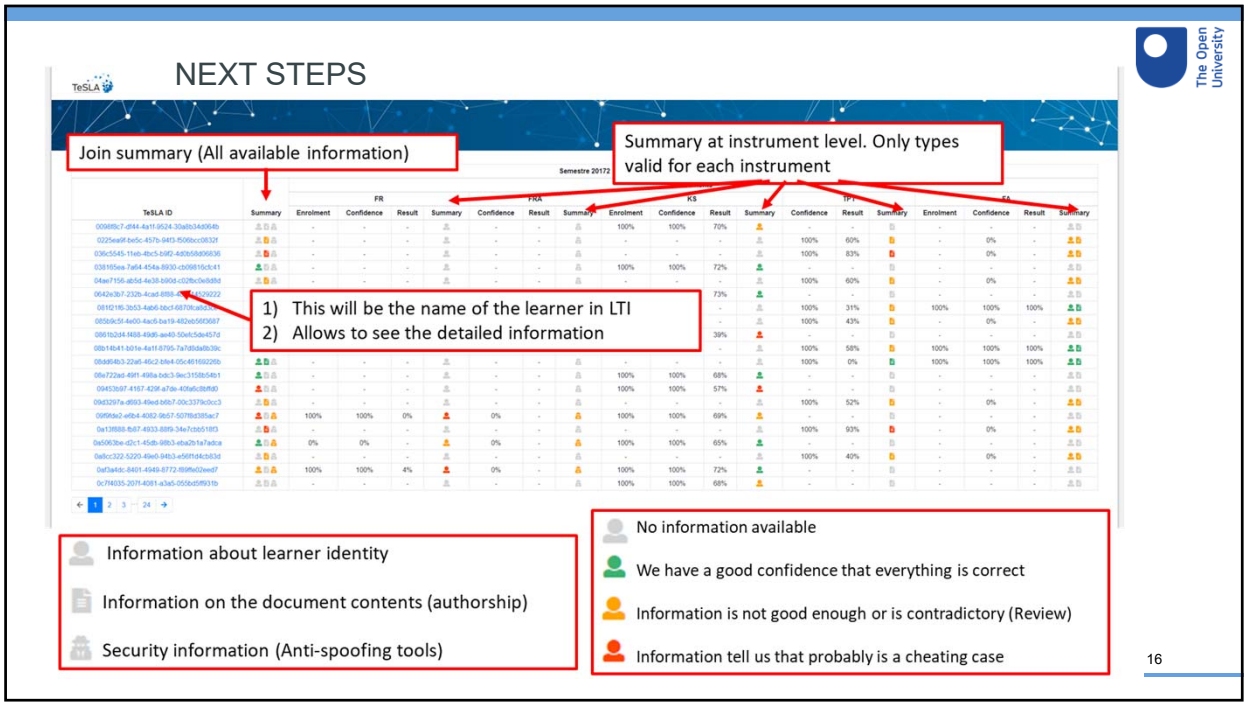
Voice recognition

Plagiarism detection

Forensic analysis

Keystroke dynamics 14


LEARNER – ASSESSMENT ACTIVITY
Demo 2
The Open University
Learner
moodle
Plugin
TeSLA
15


NEXT STEPS
TeSLA
The Open University
Join summary (All available information)
Summary at instrument level. Only types valid for each instrument
1) This will be the name of the learner in LTI
2) Allows to see the detailed information
Information about learner identity
Information on the document contents (authorship)
Security information (Anti-spoofing tools)
No information available
We have a good confidence that everything is correct
Information is not good enough or is contradictory (Review)
Information tell us that probably is a cheating case
16

18 PARTNERS INCLUDING 7 PILOT INSTITUTIONS

Online, distance

Face-to-face

Blended

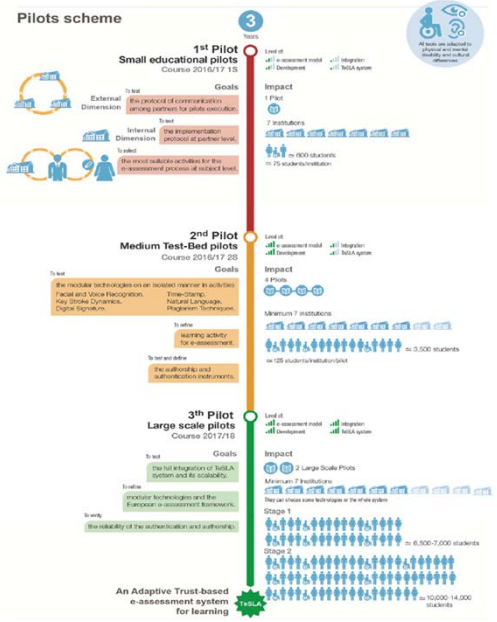
17

Pilots: objectives

PILOT 1
- Test pilot communication protocol
- Test technical implementation protocol
- 600 students

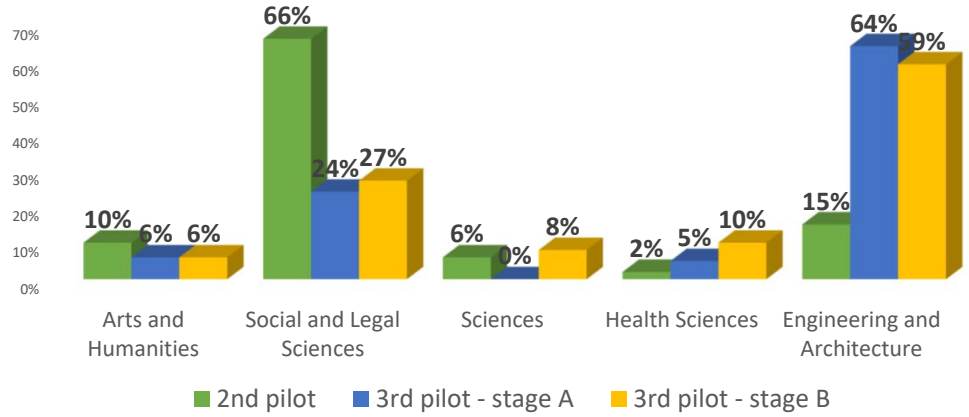
PILOT 2
- Test TeSLA instruments in an isolated manner in assessment activities
- 3,500 students

PILOT 3
- Test full integration of TeSLA system and its scalability
- Phase 1 – 7,000, Phase 2 – 10,000 students



18

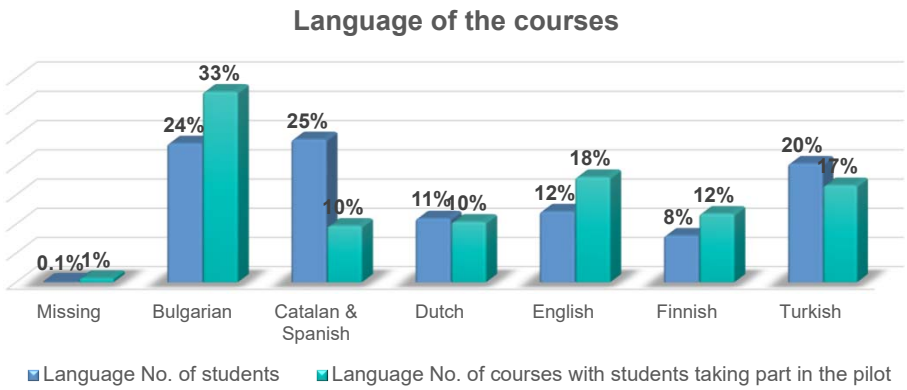
Participants: subject studied



: Field of study

19

Participants: language of study

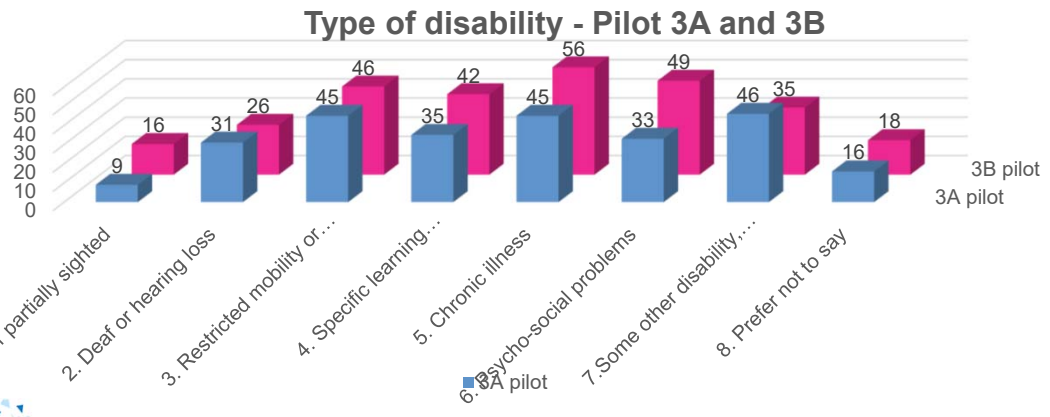


: Language of the courses – pilot 3

20

SEND: distribution of declared needs and disabilities

Note: Some partners had difficulties in identification and recruitment of SEND students, and some partners were restricted by institutional regulation.



Type of disability - pilot 3A and 3B

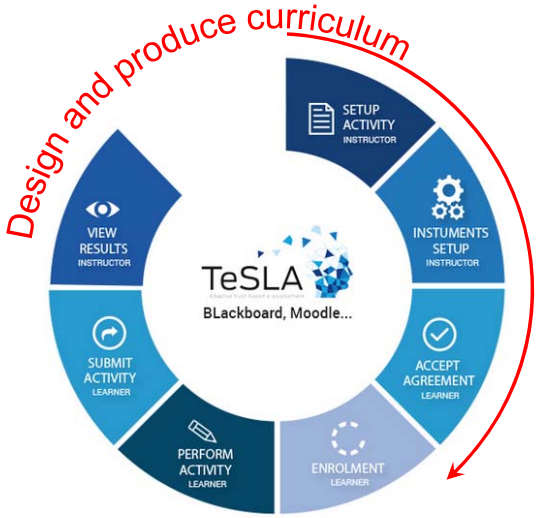
21

3RD PILOT – RESULTS

- The TeSLA system was tested in terms of integration and scalability by more **23,000 students** who completed enrolment and at least one real assessment activity with at least one instrument;
- The reliability of TeSLA authentication and authorship mechanisms was tested in a special authentication accuracy study by close to 600 students who completed assessment activities with three or all four of the authentication instruments.
- Most pilot institutions achieved a good level of pedagogical integration of TeSLA instruments, and interesting ideas and models have been developed that will be useful for others adopting TeSLA later.

22

TeSLA: embedding the suite of tools in course assessment



TeSLA experience

Student

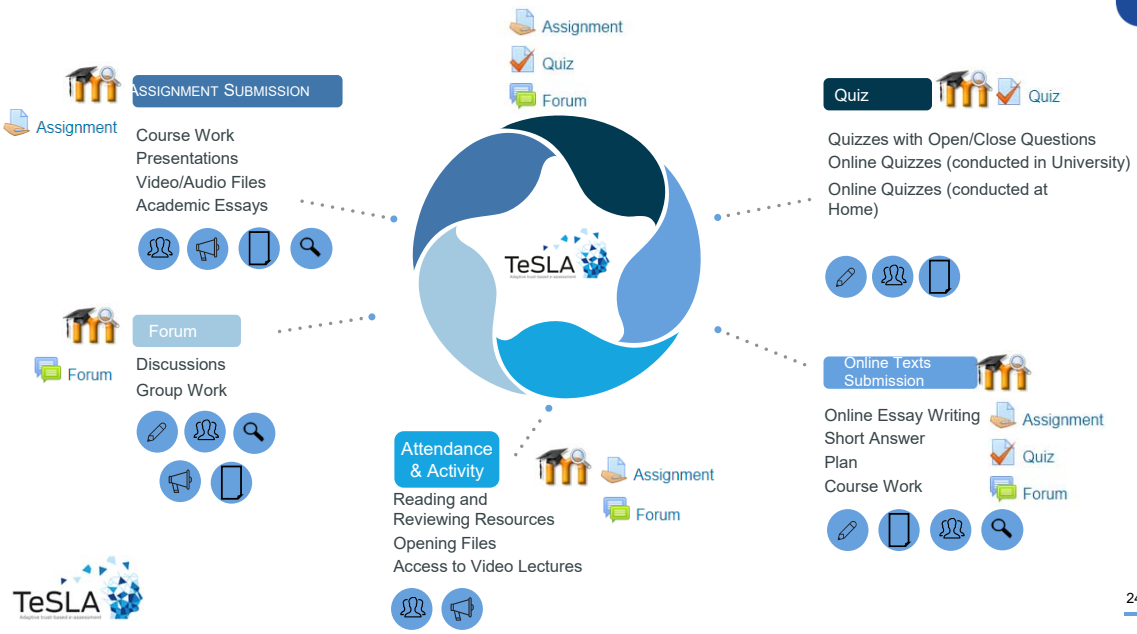
Test taker completes the assessment as he/she would normally do. TeSLA may require input/interaction during the test to be able to complete continuos analysis around identity and authorship during the test.

Report of work

Faculty members can access a full report of work authenticity and authorship together with the assessment responses.

23

ACTIVITIES WHERE TeSLA IS INTEGRATED



24

Assessment: Summary

We collected data on **532 activities** (274 in pilot 3A and 258 in pilot 3B) in **310 courses** (144 in pilot 3A and 166 in pilot 3B).

Query	Response	% of student-activities
How was the assessment used?	Diagnostic	1%
	Formative	22%
	Formative & summative	**58%**
	Summative	11%
	N/A	8%
Was the assessment supervised?	Supervised	12%
	Unsupervised	**88%**
Was the assessment individual or collaborative?	Collaborative	2%
	Individual	**94%**
	Individual & collaborative	4%
What was the type of response required in the assessment activity?	Select answer	17%
	Create answer or product	**73%**
	Perform/enact/demonstrate	11%
What was the response format for response type 'Create answer or product'?	Audio	11%
	Video	12%
	Text (natural language or code)	**76%**
	Artefact (e.g. a painting, a meal, sheet music)	1%

TEACHERS ABOUT TESLA

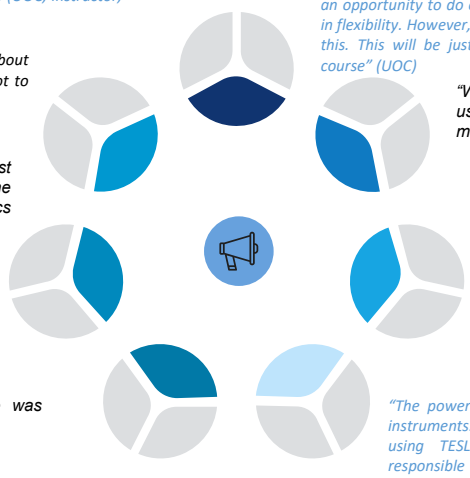
"It costs relatively little to integrate these activities that go beyond the traditional written format, to voice or audio format". (UOC, instructor, male, Computer Science degree)

"The system made students become more careful about plagiarism. They understood how responsible it is not to plagiarize." (SU Female teacher, Faculty of Pedagogy)

"TeSLA will help the teacher in the fight against cheating and plagiarism, provided him/her the evidence of such malpractice." (TUS, Mathematics teacher).

"More options for assessment methods. A possibility to organize an exam with permitted materials without reading handwritten texts. (You are not allowed to bring your own materials to the electronic exam.)" (JYU Teacher)

"During the three pilots the system interface was improved to be user-friendly and intuitive. " (TUS, Computer science teacher).



"With the TeSLA system non-cheaters are more secure, and cheaters have more difficulties to do it". (UOC, instructor, female, Psychology degree)

The use of the TeSLA system is positive, it opens a new possibility. It's an opportunity to do exams when students are at a distance. We gain in flexibility. However, it doesn't mean that all exams must be done like this. This will be just one tool more to be used depending on the course" (UOC)

"Whichever learning management system we use; it will be great to use this within that model in future. " (AU teacher)

"This secure process saves a lot of time, which is very important." (SU Male teacher, Faculty of Pedagogy)

"It was quite useful, understandable. The students did not experience any difficulty. We also provided some guidance." (AU teacher)

"The power of TESLA is in the combination of two or more instruments. ..... My observations are that even the idea of using TESLA in the assessments make students more responsible and strict about their submissions." (SU Female teacher, Faculty of Primary and Preschool Pedagogy)

26

STUDENTS ABOUT TESLA

"With TeSLA I will be sure that I'll be evaluated fairly, and maybe any cheating will be prevented. They will be 100% sure this is me who takes the exam and in the same time I am at home, far away from the University, feeling comfortable in my own zone and maybe I'll be more relaxed at the exam" (SU Female, Bachelor student)

"It increases every student's rights to her/his writings and assessments, and it makes it possible to recognise the student better, so it is like a protection (…) and my work are mine and nobody can snatch or use them." (JYU Female SEND student, 29 years)

"It's positive if the confirm UOC can use the TeSLA system to have reliable information and can validate my reputation and that there's no plagiarism when I'm assessed". (UOC, student, male, Computer Science degree)

"Identifying fraudulent students through the TeSLA system help to increment the prestige of the university". (UOC, student, male, Law degree)

"The advantage of the possibility to work from home and to avoid time constraints or financial expenses is undeniable" (SU Female, Master's student)

"If all assessments are conducted online, continuously, and being identified through the TeSLA system, it's not necessary to maintain face-to-face examination". (UOC, student, female, Multimedia Master's degree)

"The system interface was rather practical. Accessing, reaching to TeSLA was not a problem. The instructions were quite appropriate. " (AU student)

"It is quite reliable since it is an application conducted by the university. It did not cause any discomfort, to be honest" (AU student)

"Feel more comfortable, more stress-free..." (AU student)

"I think that the classical way of taking an exam is not the safest way, regarding to cheating. Doing it in front of a camera and a fully objective invigilator (in this case a computer) is much safer and reliable in terms of plagiarism, as well. Also I believe that using such systems will increase the fairness when receiving a note, because the computer can not have any favourite or unliked students to be tolerated or underrated. I personally will have a higher trust in the methods for e-authentication end e-evaluation than in the classical face-to-face method" (TUS, Applied mathematics student).

"It is very useful system and it makes things much easier for students, because we can't always be present at classes. This gives us the possibility to go on with our colleagues" (SU Female, Bachelor student)

"Overall my opinion is that it could be an excellent way of e-authentication. However, many people might be hesitant to agree having their typing "monitored" and live due to online security concerns. A way to reassure them might be to explain in advance the way this would work" (OUUK student 11, man, 31- 40 years old)

27

SEND STUDENTS ABOUT TESLA

"In face-to-face exams, I require more time, I bring a cushion, a pollution mask and my laptop... I suffer in the subway, it's a nightmare, I'm sensitive to light and smell. Being at home is more comfortable, you're more relaxed performing exams online". (UOC, student, male, SEND, Computer Science degree)

"E-authentication, as an OU home-based student is very important especially as I am a disabled student and cannot go to f2f tutorials all my work, is internet based, therefore, this requires my confidence in internet security and confidence with all authentication in any of the processes regarding my online study. This includes sending my work over the web to my tutor also on the flip side, the university having the necessary needs to check my work is, in fact, my own and not copied from other sources."
(OUUK student 7 woman, special educational needs, 22–30 years old)

"The product is well suited for students with special needs, because it's easy to use, it can be used from a distance and it doesn't require any additional skills to be used" (TUS SEND student).

"The advantages of the TeSLA system are not only for people with disabilities, anyone can benefit from them". (UOC, student, male, SEND, Educational Master's degree)

"For those students with restricted mobility, online assessment can be advantageous. Furthermore, if you can guarantee the identity of the student, I don't know why we should still maintaining face-to-face examination". (UOC, student, male, SEND, Computer Science degree)

"E-authentication, as an OU home-based student is very important especially as I am a disabled student and cannot go to f2f tutorials all my work, is internet based, therefore, this requires my confidence in internet security and confidence with all authentication in any of the cprocesses regarding my online study. This inludes sending my work over the web to my tutor also on the flip side, the university having the necessary needs to check my work is, in fact, my own and not copied from other sources."
(OUUK student 7 woman, special educational needs, 22–30 years old)

"I support the use of the TeSLA system. The more guarantees and quality, the better". (UOC, student, female, SEND, Educational Master's degree)

28

Publications: to date, ORO

Bektik, Duygu; Cross, Simon; Holmes, Wayne; Aleksieva, Lyubka and Whitelock, Denise(2017). A European pilot study of a modular assessment system designed to authenticate the authorship of online learners. In: *CALRG Annual Conference 2017*, 14-16 Jun 2017, The Open University, Milton Keynes, UK.

Edwards, Chris; Holmes, Wayne; Whitelock, Denise and Okada, Ale (2018). Student Trust in e-Authentication. In: *L@S '18: Proceedings of the Fifth Annual ACM Conference on Learning at Scale*, ACM, New York, article no. 42.

Edwards, Chris; Whitelock, Denise; Brouns, Francis; Rodríguez, M. Elena; Okada, Alexandra; Baneres, David and Holmes, Wayne (2019). An embedded approach to plagiarism detection using the TeSLA e-authentication system. In: *TEA 2018 Technology Enhanced Assessment Conference*, 10-11 Dec 2018, Amsterdam, the Netherlands, (In Press).

Edwards, C.; Whitelock, D.; Okada, A. and Holmes, W. (2018). Trust in online authentication tools for online assessment in both formal and informal contexts. In: *ICERI2018 Proceedings* (Gómez Chova, L.; López Martínez, A. and Candel Torres, I. eds.), 12-14 Nov 2018, Seville, Spain, IATED Academy, pp. 3754–3762.

Okada, Alexandra; Whitelock, Denise and Holmes, Wayne (2017). Students' views on trust-based e-assessment system for online and blended environments. In: *The Online, Open and Flexible Higher Education Conference*, 25-27 Oct 2017, Open University, Milton Keynes.

Okada, Alexandra; Whitelock, Denise; Holmes, Wayne and Edwards, Chris (2017).Student acceptance of online assessment with e-authentication in the UK. In: *The 2017 International Technology Enhanced Assessment Conference (TEA 2017*, 5-6 Oct 2017, Barcelona, Spain.

Okada, Alexandra; Whitelock, Denise; Holmes, Wayne and Edwards, Chris (2019). e-Authentication for online assessment: A mixed-method study. *British Journal of Educational Technology*, 50(2) pp. 861–875.