Academic Integrity through e-authentication and authorship verification for e-assessment: impact study

Conference or Workshop Item

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Academic Integrity through e-authentication and authorship verification for e-assessment: impact study

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Prof. Dr. Denise Whitelock
THE OPEN UNIVERSITY (UK)

- The largest open distance university in Europe
- ~170,000 students
- ~24,000 students with SEND
- One of the seven TeSLA pilot institutions
- TeSLA WP8 (Evaluation) lead
Pre- and post- questionnaires
online templates
and focus group

Pilot leaders summary
and report

Technical team
summaries
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>4,058 students</td>
</tr>
<tr>
<td>SEND Students</td>
<td>330 students</td>
</tr>
<tr>
<td>Educators</td>
<td>54 educators</td>
</tr>
<tr>
<td>Universities</td>
<td>7 universities</td>
</tr>
</tbody>
</table>
PARTICIPANTS

- 7 pilot coordinators
- 7 technical professionals
- 7 institutional leaders
<table>
<thead>
<tr>
<th>STUDENTS</th>
<th>AU</th>
<th>JYU</th>
<th>OUNL</th>
<th>OUUK</th>
<th>SU</th>
<th>TUS</th>
<th>UOC</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total of students to use TeSLA (unique participants)</td>
<td>2,325</td>
<td>1,844</td>
<td>417</td>
<td>1,617</td>
<td>1,457</td>
<td>1,574</td>
<td>1,868</td>
<td>11,102</td>
</tr>
<tr>
<td>Students who completed the pre-questionnaire (% of total)</td>
<td>240</td>
<td>167</td>
<td>84</td>
<td>853</td>
<td>232</td>
<td>783</td>
<td>1169</td>
<td>3528</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>9%</td>
<td>20%</td>
<td>53%</td>
<td>16%</td>
<td>50%</td>
<td>63%</td>
<td>32%</td>
</tr>
<tr>
<td>Students who completed the post-questionnaire (% of total)</td>
<td>171</td>
<td>115</td>
<td>57</td>
<td>574</td>
<td>226</td>
<td>452</td>
<td>627</td>
<td>2,222</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>6%</td>
<td>14%</td>
<td>35%</td>
<td>16%</td>
<td>29%</td>
<td>34%</td>
<td>20%</td>
</tr>
</tbody>
</table>
### TEACHERS

<table>
<thead>
<tr>
<th></th>
<th>AU</th>
<th>JYU</th>
<th>OUNL</th>
<th>OUUK</th>
<th>SU</th>
<th>TUS</th>
<th>UOC</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>13</td>
<td>57</td>
<td>107</td>
</tr>
<tr>
<td>who completed the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre-pilot questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>34</td>
<td>67</td>
</tr>
<tr>
<td>Number of teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>who completed both the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre- &amp; post- pilot</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>questionnaires</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Includes teaching staff with different roles, such as course designers, instructors, tutors, students’ assessors and course coordinators. The majority were comfortable using technology.
All partners used the BOS survey system with the same set of questions (translated into the local languages).
# PILOT EVALUATION STUDIES

## Key Evaluation Questions across themes

<table>
<thead>
<tr>
<th>D8.6</th>
<th>KEY THEMATIC QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. STUDENT PERSPECTIVES</strong></td>
<td>What are students’ perceptions on cheating &amp; plagiarism, pros &amp; cons on e-authentication systems and TeSLA tools? How about SEND?</td>
</tr>
<tr>
<td><strong>2. STAFF PERSPECTIVES</strong></td>
<td>What are educators’ views on TeSLA interface and students’ experience? What are the managers’ opinions about integration, scalability and policy?</td>
</tr>
<tr>
<td><strong>3. TECHNOLOGY DEVELOPMENT</strong></td>
<td>What are the technical team’ views on TeSLA vulnerabilities, stress tests, technical failures, accessibility, quality assurance, data &amp; system integration?</td>
</tr>
<tr>
<td><strong>4. EFFECTIVENESS OF THE AUTHENTICATION AND AUTHORSHIP</strong></td>
<td>How effective is TeSLA system in authentication (successful and failed attempts; inauthentic and inappropriate uses; disruption and delays;…)?</td>
</tr>
<tr>
<td><strong>5. ASSESSMENT DESIGN AND PEDAGOGY</strong></td>
<td>How engaged are teachers and managers with TeSLA system, including assessment design, teaching, training and support?</td>
</tr>
<tr>
<td><strong>6. AWARD BODIES and POLICY MAKERS</strong></td>
<td>Does TeSLA contribute to and support national education policy and social aspirations?</td>
</tr>
<tr>
<td><strong>7. STAFF, RESOURCE and FINANCIAL COSTS</strong></td>
<td>What was the technological readiness of staff? How much does assessment cost at present?</td>
</tr>
<tr>
<td><strong>8. METHODOLOGY and EVALUATION</strong></td>
<td>What are the issues related to data collection and analysis, students’ consent, SEND participation?</td>
</tr>
<tr>
<td><strong>9. TRUST and EVALUATION</strong></td>
<td>Do users feel informed, comfortable and confident with the TeSLA system? why students do not participate or drop out?</td>
</tr>
</tbody>
</table>
OUTCOMES

Students
The overall experience with the TeSLA instruments was positive for more than 50% of the students from all partner universities.

More than 70% of participating students considered the key advantages of e-assessment with e-authentication to be: “to ensure that my examination results are trusted” and “to prove that my essay is my own original work”.

OUTCOMES

Students
The most popular TeSLA instruments for students were Forensic Analysis and Anti-Plagiarism.

Students found these instruments less intrusive.

In addition, less time was required for their use.
OUTCOMES

Students

Many students said that the e-authentication would increase trust in e-assessment for students, institutions and employees. The most popular reasons given included: e-authentication would make it more difficult for students to cheat.

35% of students did not understand how the TeSLA system e-authenticated their identities and checked their authorship.
OUTCOMES

Students

- “Reliable and fair evaluation.”
- “Location and time independence.”
- “Proves the authenticity of the work.”
- “Less stressful and more adapted to my mental problems.”
- “To not have to travel to an examination centre and avoid all the associated logistics, (transport, time off, childcare, school pick-up, etc.).”
- “To avoid to move to a place to perform the face-to-face exam.”
- “To help SEND students (reduced mobility).”
- “Less stressful.”
<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Around 40% of students were not sure about the details of cheating or plagiarism.</td>
</tr>
<tr>
<td></td>
<td>Many students are not properly aware of the consequences of plagiarism, now to use sources appropriately, reasons for not cheating, how to undertake collaborative work without cheating or plagiarism.</td>
</tr>
</tbody>
</table>
“Copying and pasting a paragraph from an academic paper into my assignment and crediting the original source is plagiarism (a type of cheating).”

Pilot universities
Very low numbers of students who are willing to share personal data (such as face images or voice).

Students who are not willing to share any type of personal data was as low as 30%.

This highlights the need to investigate students’ resistance and to provide them with more clarification about data privacy and security.
FACE RECOGNITION

50% of participants considered face recognition not intrusive. They were comfortable with it, and willing to use it again.

VOICE RECOGNITION

50%–60% of participants were comfortable with using voice recognition, and were willing to use it again. However, a small number (<20%) did find voice recognition a little intrusive.
KEYSTROKE DYNAMICS

More than 70% of participants were comfortable with using keystroke dynamics, and were willing to use it again.

FORENSIC ANALYSIS

Around 70% of participants were comfortable using forensic analysis, and were willing to use it again.
OUTCOMES

Students

ANTI PLAGIARISM

Around 70% of participants were comfortable using anti-plagiarism, and were willing to use it again.

ALL TESLA TOOLS

There were interesting differences between the students in different countries (although the differences were not statistically significant).
“I feel uneasy about showing my face or facilitating my fingerprint. It is effortless to spread such type of data.” (UOC)

“To be brutally honest, personal data sharing is never a good feeling.” (TUS)

“If it is offered to students, it means the information is protected well enough and cannot be breached so easily.” (SU)

It is not clear for me who will have access to my data, how will it be used and how will it be protected.” (OUUK)

“I trust the OU and expect that my data will be carefully processed, especially, when it is scientific research.” (OUNL)

“I didn’t find testing unsecure or suspicious, because University was behind this.” (JYU)

“It is quite reliable since it is an application conducted by the university.” (AU)
Teaching staff were satisfied or very satisfied with the TeSLA experience (particularly TUS 70% and SU 100%).

Most teaching staff agreed that the use of TeSLA “will increase trust of e-assessment among universities and employers” and “it will help participants trust the outcomes of e-assessment”.
Teaching staff suggested that further improvements (ease of implementation, interoperability, graphical user interface, browsers and OS compatibility) would be welcome.

Most teaching staff agreed that good technical support was important.
Teaching staff said that e-authentication made new types of assessments possible for the first time.

They also said that the e-authentication helped increase their trust of e-assessment, by reducing cheating and plagiarism.
Almost all the participating teachers would recommend TeSLA to a colleague and would be willing to adopt it in their institution (those who wouldn’t were only concerned about the technical implementation of the prototype system in their institutions’ existing systems).
Teacher requirements were for a user-friendly system, usable product, well-documented references, information about how the tools work and guidelines for interpreting results and detecting cheating.
OUTCOMES

Teaching staff

“Students don’t want to write too personal things about themselves, if they know that it will be saved for e-authentication purposes. So, when designing e-assessment task, this should be taken into account.” (JYU)

“Fewer students asked questions about data protection compared to the previous system, as they are more aware of TeSLA.” (OUUK)
RECOMMENDATIONS

FOR STUDENTS

Institutions need to clarify academic malpractices (plagiarism and cheating) and provide more explanations to foster academic integrity.

Institutions need to promote discussion about data security and privacy with students, to increase their willingness to share personal data.

Institutions cannot assume, because they are trusted, that students will readily accept these technologies – Layers of trust.
RECOMMENDATIONS

FOR TEACHING STAFF

Institutions need to provide teaching staff with in-time technical support and pedagogical guidance and information about how to interpret the authentication results.

Institutions need to design strategies for involving greater numbers of teaching staff.
RECOMMENDATIONS

FOR TECHNICAL TEAMS

- Technical teams need to be prepared to solve problems related to technical failure, vulnerability, stress testing, accessibility and usability, quality assurance, and system integration.

- Technical teams need to provide practical guidelines about the functionalities of the system.
“Preventing cheating is a good thing. Even though you’re honest yourself, there’s no guarantee that others are.” (Student)

“I definitely do not feel anxiety over these kinds of measures. I think they are a normal part of information security and confidential data transmission.” (Teacher)

THANK YOU