Online Proctoring Fall 2020

Description

The purpose of this document is to outline the evaluation criteria and approach taken for the Online Proctoring Spring / Summer pilot, and the assessment and recommendation by the Project Team for the 2020/2021 terms to support examinations at McMaster.

Background

Before COVID-19, McMaster University Instructors administered the majority of examinations in-person. COVID-19 presented an academic challenge in teaching and learning remotely – in particular, it is not possible to deliver in-person examinations with proctors or invigilators. For the end of the Winter 2020 term, and with the support of MacPherson Institute, some Instructors transitioned examinations into Avenue to Learn without the use of any additional third-party tools, while other Instructors were able to utilize other evaluation methods. And in some cases, marks were determined based on current course standings. These solutions were unlikely to fulfill the needs for all courses, and accredited courses, so a solution to provide a mode for delivering online proctored examinations was prioritized at the end of the winter term.

To address this challenge, a Steering Committee sponsored by Acting Vice Provost (Faculty) Kim Dej and Assistant Vice President and Chief Technology Officer Gayleen Gray was formed to oversee a pilot project and evaluation of online proctoring solutions for Spring/Summer 2020. The larger purpose of this pilot was to evaluate Online Proctoring solutions in order to recommend a campus-preferred solution for Fall 2020 and what steps might be involved to implement. In addition to the Steering Committee, a project team was formed to undertake the evaluation and pilot online proctoring activities during the spring / summer term.

Goals for Online Proctoring

- Uphold academic integrity requirements while continuing to support ways to proctor examinations without the ability to hold exams 'in-person'
- Support accreditation requirements for programs
- Meets a defined set of functional requirements as identified by the Steering Committee

Requirements for the preferred solution

- Use artificial intelligence (AI) rather than reliance on 'in-person' human proctoring
- Provides validation of student identity
- Integrates with Avenue to Learn for ease of access
Online Proctoring Fall 2020

- Meets McMaster's accessibility requirements
- Adheres to McMaster's privacy and security requirements

Approach

The project team identified online proctoring tools based on the above requirements in early Spring 2020. Seven (7) proctoring tools were broadly assessed to create a shortlist of solutions for the pilot phase. Respondus and Honorlock, were chosen as the pilot solutions for the spring and summer terms, respectively. Both tools:

- Use artificial intelligence (AI) to proctor learners
- Integrated with Avenue to Learn
- Requires webcams for learners to validate learner identification
- Provide an option for the system to moderate the learners during examination (based on Instructor's requirements and specifications).
  - The Instructors could opt out of moderation, for example in open book exams.
  - The Instructors do not have to use the webcam feature and can chose to monitor a learner's behaviour on a browser.

In addition:

- Respondus requires learners to download the tool on their computer or tablet (with the use of any browser to launch the assessment)
- Honorlock requires learners and Instructors to use Google Chrome to install an additional extension.

In total, approximately 3,840 learners participated in the pilot across approximately 40 classes.

Upon completion of the pilot, feedback surveys were sent to Instructors. The Instructors gave an average of 3.5/5 for overall experience, irrespective of the vendor. The results from the survey, and the number and type of issues reported during the pilot, helped evaluate the usability of the two solutions. This information, along with the licence cost for the academic year 2020/2021, provided the project team with a means to evaluate the two solutions and an opportunity to make a recommendation for the Fall 2020 term.

Other tools

McMaster Continuing Education uses Examity for proctoring exams. Examity uses human proctors. At the start of COVID-19, the Examity service shut down completely as proctors were physically located together in their headquarters. Examity was not
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included in the pilot as the Steering Committee identified the need for artificial intelligence to deliver proctored exams rather than just human proctoring.

As a note, the project team is also aware of other solutions that were used by Instructors to proctor their exams. The solutions included Proctorio delivered through TopHat and Software Secure – an Avenue to Learn partner. Neither of these solutions satisfactorily met the conditions identified by the Steering Committee and were not included in the pilot.

Accessibility Review

All online proctoring tools investigated support accessibility requirements as laid out by McMaster University including assistive technologies.

Honorlock - can be extended to support human intervention features to support students (however this feature comes at a significant additional cost). Honorlock relies solely on Chrome. Chrome does not support all Accessibility technologies that rely on individual devices, such as tablets. Respondus – supports a variety of browsers and devices which supports the variety of assistive technologies.

Recommendations for implementation:

- Provide resources to students on how to meet their accommodation needs with the Online Proctoring solution.
- Provide clear resources to Instructors on how to support learners with accessibility needs using online proctoring – both from the vendor as well as Student Accessibility Services.

McMaster Student Accessibility Services would support the implementation of Respondus, with the use of other technologies to support the individual needs of the students. See appendix A for the full analysis. In addition to the selected proctoring tool, Student Accessibility Services will rely on a mix of solutions, including Microsoft Teams and Zoom to support human intervention from McMaster proctors.

Security & Privacy Review

Both online proctoring tools are very equal in their security and privacy responses. Both meet some of McMaster University’s security and privacy requirements. The implementation of either solutions is supported by the University Secretariat, with the understanding that there will be privacy concerns expressed by McMaster students and faculty. Once an online proctoring solution is selected, the recommendation is to conduct a Privacy Impact and information security Assessment, also known as a PIA, at the end of every term.
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A detailed Security and Privacy analyses is available in a separate document, please contact Trudi Wright, Privacy and Records Management Specialist, University Secretariat for a copy of the review. Trudi.Wright@mcmaster.ca

Technical Review

The project team conducted a technical review for all 7 products. This included a survey on excel asking specific questions around privacy, security, experience, support, and accessibility; HECVATs from each vendor were also analyzed; and finally, a privacy and security impact was conducted on each vendor. This allowed the project team to narrow down the list to 2 vendors: Respondus and Honorlock.

Upon conducting the pilot and delving deeper into the support tickets (led by the MacPherson Institute by Jon Kruithof), both tools had similar numbers of service requests.

Honorlock - provided a live training session with the Instructors to prepare for the Summer pilot. This may have also helped remedy any anxieties around online proctoring.

Respondus - had more requests related to usability, which upon further reflection appear to be related to a communication and timing issue (attributed to the tool being implemented a day or so before final exams) rather than functionality of the solution. At the time, Respondus did not offer live training, however this has now been made available for the Fall/Winter terms.

Academic Integrity Review

Honorlock – Instructors have access to all learner recordings, however the ones that the flagged for review appear at the top of the list.

Respondus – Instructors have access to all learner recordings, however the ones that the flagged for review appear at the top of the list.

Evaluation Details: Tool comparison

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Honorlock</th>
<th>Respondus</th>
<th>McMaster In-person Invigilated Exams</th>
<th>Examity (live proctoring)</th>
</tr>
</thead>
</table>


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<table>
<thead>
<tr>
<th>Feature</th>
<th>Yes</th>
<th>Yes</th>
<th>No</th>
<th>Yes – API</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports pandemic social distancing requirements</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Technically easy to set up and can be administered any time</td>
<td>Yes</td>
<td>yes</td>
<td>No</td>
<td>Yes – API</td>
</tr>
<tr>
<td>Unlimited exam sessions:</td>
<td>Yes, not constrained to final exams; can be deployed to all examinations</td>
<td>Yes, not constrained to final exams; can be deployed to all examinations</td>
<td>No – final exams only. Mid-terms and quizzes are proctored by Instructors / TAs</td>
<td>No – Final Exams only</td>
</tr>
<tr>
<td>Easy to retrieve recorded data</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>Initial live training for Instructors – lowers errors and provides support for Instructors</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Access to Ongoing training support videos and documents</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>24/7 live chat</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes – in exam support</td>
<td>Yes</td>
</tr>
<tr>
<td>Search and Destroy (software automatically searches for leaked assessment content. It then removes the material from third-party websites by filing DMCA copyright takedown notices.)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Online Proctoring Fall 2020

<table>
<thead>
<tr>
<th>Device Compatibility</th>
<th>Google Chrome only with extension (for both Instructor and learner)</th>
<th>Desktops/Laptops and iPads – downloadable application that can work with any browser</th>
<th>N/A</th>
<th>Desktop/Laptop only; any browser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration with accessible tools – requirements set</td>
<td>Yes – opportunity for process improvements</td>
<td>Yes - opportunity for process improvements</td>
<td>Manual</td>
<td>Yes - opportunity for process improvements</td>
</tr>
<tr>
<td>Examination Types</td>
<td>Unlimited sessions (exams and quizzes that require proctoring)</td>
<td>Unlimited sessions (exams and quizzes that require proctoring)</td>
<td>Final exams only (approximately 182,000 exams)</td>
<td>Final exams</td>
</tr>
<tr>
<td>Terms</td>
<td>Fall / Winter/ Spring / Summer</td>
<td>Fall / Winter/ Spring / Summer</td>
<td>Fall / Winter</td>
<td>Fall/Winter</td>
</tr>
<tr>
<td>Direct Cost</td>
<td>$525,000 ($390KUSD)</td>
<td>$136,500 ($105K USD)</td>
<td>$440,000</td>
<td>$36 USD/exam</td>
</tr>
<tr>
<td>Indirect Costs</td>
<td>Review of reports for potential academic dishonesty cases</td>
<td>Review of reports for potential academic dishonesty cases</td>
<td>$300K - $400K (TA and Instructor proctoring including Spring / Summer Terms)</td>
<td>Review of reports for potential academic dishonesty cases</td>
</tr>
<tr>
<td>Avenue to Learn Course Shell Set up</td>
<td>May result in additional requests</td>
<td>May result in additional requests</td>
<td>Current</td>
<td>May result in additional requests</td>
</tr>
</tbody>
</table>

Project Outcome

The scope of the online proctoring project was to evaluate and determine which of the solutions could provide Online Proctoring as a centrally supported solution.

The proposed solution will enable Instructors to deliver proctored examinations throughout Fall 2020 (and available for Winter 2021) to meet the requirements of teaching and learning remotely during COVID-19. This would be available to 33,000 full and part-time students including Undergrad and Graduate Students. There is a buffer if
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more licences are required once registration numbers are finalized for the Fall 2020 term. It will be important to promote the availability of a centrally supported solution to all stakeholders to reduce the use of other proctoring solutions and to ensure a consistent experience for students.

Both solutions are priced to provide students (without the learners incurring any costs) with an unlimited number of proctored exams and quizzes, to meet the varied needs of the Faculties and Instructors.

Recommendation

The project team recommends Respondus as the online proctoring tool to use for the 2020/2021 academic year.

Respondus meets the criteria established at the start of the pilot:

Goals for Online Proctoring

- Uphold academic integrity requirements while continuing to support ways to proctor examinations without the ability to hold exams 'in-person'
- Support accreditation requirements for programs
- Meets a defined set of functional requirements as identified by the Steering Committee

Requirements for the preferred solution

- Use artificial intelligence (AI) rather than reliance on 'in-person' human proctoring
- Provides validation of student identity
- Integrations with Avenue to Learn for ease of access.
- Meets McMaster’s accessibility requirements
- Adheres to McMaster's privacy and security requirements

In addition, the team recommends

- A review of the privacy and security concerns each term
- A review of concerns raised through Student Accessibility Services and the match with the accessibility mandates every term.
- A review of the cases raised through the Academic Integrity office to improve review of flagged examinations.
- Hiring an additional Avenue to Learn Support person for the first year, who will be responsible for the ongoing support of Respondus and additional Avenue to Learn setup and implementation related to online proctoring.
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Once the recommendation is endorsed by the Project Sponsors, there will be other activities required before the Online Proctoring solution will be available to Instructors:

- Procurement – completion of a Limited Tender submission, set up of Respondus as a supplier, and set of the purchase order in MacBuy. Review of the contract. Payment of the invoice.
- Training & Support – sharing of materials created by Respondus with Instructors.
- Communication to all Instructors and Student
- Approximate go-live date is the end of September 2020.

Preparing for Fall 2020 Online Proctoring

Several necessary activities for the use of an Online Proctoring tool have already been fulfilled as the result of the pilot project, and there are steps still to be done:

1. Communication

   One of the key lessons learned from the pilot phase was the importance of communication to all stakeholders. It will be necessary to develop a comprehensive communications plan for Students, Instructors, and faculty administration to announce the use of an online proctoring tool. There is a potentially significant negative learner perception of security and privacy with the use of online proctoring because of the need for a webcam to monitor the learner before and during the exam.

   It is important to recognize the impact or perception of both students and Instructors as it relates to Online Proctoring. See the table of Stakeholder Impact in the Evaluation Details section. The project team recommends that a strong communications plan be developed for the Fall/Winter terms to mitigate concerns and to ensure that Instructors and learners have clarity on the system, its use, the support opportunities and so forth. This may require a dedicated resource in advance of the fall term.

2. Policy creation and adherence:

   McMaster University has already completed policy revisions for the use of online proctoring, including:

   - Revising course outlines to include language around online proctoring.
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In addition, the University Secretariat Office will need to review central policies to support the fair use of online proctoring (data retention, deletion, etc.). The Privacy Officer and the Information Security Officer reviewed the system(s) for any concerns related to McMaster standards and were satisfied that this system could meet our needs.

3. Support and Training

The project team proposes that the MacPherson Institute support the selected proctoring tool centrally as they currently provide ongoing teaching support for Instructors. Furthermore, they have gained knowledge of the tool as a result of the pilot project, including an integration with Avenue to Learn. MacPherson is one of the few departments on campus that works directly with all Faculties.

MacPherson is also involved in the inculcation of pedagogy in McMaster course instruction, including how to use educational technologies appropriately and responsibly. This can be extended to include training Instructors on how to administer online proctoring, as well as the communications with learners at the beginning of the term to outline what online proctoring is and what it may look like in their course.

During the Spring/Summer pilot, ~1% of individuals involved (learners and Instructors) needed assistance from the Avenue to Learn team. Scaling this to the Fall/Winter terms, where up to 65% of courses are set up with course shells in Avenue to Learn, the MacPherson team recommends the hiring of an additional resource on a one-year contract to evaluate the support needs. This support isn't entirely just for online proctoring. The individual would further support other Avenue to Learn mandates. Furthermore, the university will need to determine the hours of support. Currently, Avenue to Learn provides support 8 AM to 8 PM Monday to Thursday. If this timeslot changes (to accommodate more time), it puts more pressure on the team to determine where the support comes from. There will also be pressures driven by covering of illnesses and vacations of existing team members.

Support for Online Proctoring can be broken down to 3 categories:

1. Technical
   - Troubleshooting learner and Instructor inquires during work hours (provided by MacPherson Avenue to Learn team).

2. Pedagogical
   - When and why you should use an online proctoring tool (provided by MacPherson as a whole, which will require integrating and support of MacPherson Educational Liaisons)

3. Training
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- How to use the tool for examinations (comes from the vendor). This will include live training events, pre-recorded webinars, video walk-throughs and documentation.
- The Avenue to Learn team will direct Instructors to the latest training material as required.

4. Risks

There are some key risks that need to be managed in the use of Online Proctoring. These include:

- Ongoing security and privacy perceptions and the fact that the system does monitor learners. Recommendation: Mitigate with the formation of an oversight committee that conducts a privacy and security assessment on each term to report concerns and request changes from the vendor.
- The cost and effort of ongoing support of the product which will require integration into one of the support units on campus. The Project Team is recommending MacPherson. Refer to the above support discussion on costs.
- Increased costs over time. The contract will be signed with a pre-determined number of learners defined, and that is how the overall costs is evaluated by the vendor. Analytics from Institutional Research and Analysis were used to determine the number of full and part-time learners, and this count will be evaluated by the vendor based on usage which may see future fluctuations.
- That there are still steps to be completed to make the selected Online Proctoring solution available to the McMaster community.
- Dissatisfaction of Instructors and learners during the pilot phase was related to a lack of communication. Recommendation: Develop a robust communication plan for the implementation phase.

Next Steps

Once the recommended solution is endorsed by the Project Sponsors, and the Steering Committee, the project proposal will be shared through IT Governance, first with the Teaching and Learning Technology Committee, and then the IT Executive Committee.

It will be necessary to finalize the purchase of the system in early fall for midterm use. Installation, support model frameworks and creations and most importantly, communications, all need to be put in place. This may require additional resources in the short term.

Ongoing, an advisory or oversight committee may be warranted.
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Timeline

<table>
<thead>
<tr>
<th>Timeline</th>
<th>Deliverable</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>By August 31, 2020</td>
<td>Project team recommendation endorsed by Project Sponsors</td>
<td>Project Manager, Project Sponsors, Project Team</td>
</tr>
<tr>
<td>September 4, 2020</td>
<td>McMaster Contract review and signoff</td>
<td>Project Manager, Procurement, Legal, Gayleen Gray, Kim Dej</td>
</tr>
<tr>
<td>September 4, 2020</td>
<td>Finalize purchase through Procurement, completion of Sole Source justification, set up of purchase order</td>
<td>Project Manager, Procurement</td>
</tr>
<tr>
<td>By September 11, 2020</td>
<td>Steering Committee meeting to discuss implementation plan and considerations for implementation.</td>
<td>Project Manager, Technical Lead, Steering Committee members, Project Sponsors</td>
</tr>
<tr>
<td>By September 11, 2020</td>
<td>Communication to the community (selection of solution and when first exam / quizzes can be completed through the solution) Sharing to links to training How to request an Avenue to Learn Course Shell</td>
<td>Communications Resource (TBD)</td>
</tr>
<tr>
<td>By September 18, 2020</td>
<td>Online Proctoring Solution available for Instructors to use.</td>
<td>Communications Resource (TBD)</td>
</tr>
<tr>
<td>By October 31, 2020</td>
<td>Hiring of support resource and location</td>
<td>Lori Goff, Kim Dej</td>
</tr>
</tbody>
</table>

Budget Details

<table>
<thead>
<tr>
<th>First Year Project Cost</th>
<th>2020/21</th>
<th>Proposed Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Avenue to Learn / Online Proctoring Support</td>
<td>$65,000.00 CAD</td>
<td>Support Instructors, direct to training, address any set up questions.</td>
</tr>
<tr>
<td>Respondus Licence</td>
<td>$105,000 USD ($136,500 CAD)</td>
<td>Unlimited proctored exams and quizzes for 33,000 students</td>
</tr>
<tr>
<td>Communications</td>
<td>$0.00</td>
<td>Prepare communications plan, use of existing resource</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$201,500 CAD</strong></td>
<td></td>
</tr>
</tbody>
</table>
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Recommendation: McMaster University and the MacPherson Institute to assess online proctoring in Spring (May) 2021 based on 2020/2021 academic year to determine the need for an ongoing support resource. This will provide a clear understanding of future costs in using online proctoring (including a future beyond COVID-19). This will be based on:

- Number of support tickets created and closed, length of time to resolve issues or requests.
- Usage of Online Proctoring by Faculty
- % of new Avenue to Learn course shells created.
- Feedback from Instructors and Educational Liaisons.

In addition, there will be an evaluation of usage fees (proposed for year two based on course and faculty usage). A decision will need to be made by the Vice-Provost (Faculty) and the MacPherson Institute on the nominal fee model.

McMaster IT Strategic Plan Alignment

| Seamless foundation | This project will ensure that during pandemic learners have a safe space to take examinations without compromising their health. Furthermore, this will ensure academic integrity is being upheld. Instructors will also have an easy way to deploy the exam whenever they want without taxing McMaster operational processes. Online Proctoring will be fully integrated with Avenue to Learn. Instructors will be able to easily deploy their examinations with only a few clicks within Avenue to Learn, including different ways to control how they want to deploy the exam. Instructors can also easily review exam recordings within Avenue to Learn. Learners will access the exam through Avenue to Learn without going to another tool. |

Stakeholder Scale of Impact

<table>
<thead>
<tr>
<th>Area</th>
<th>*Impact Benefit</th>
<th>**Impact Benefit Assessment</th>
<th>Impact</th>
</tr>
</thead>
</table>
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<table>
<thead>
<tr>
<th>Role</th>
<th>Impact</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learners</strong></td>
<td>Negative</td>
<td>High</td>
</tr>
<tr>
<td><strong>Instructors</strong></td>
<td>Mostly Positive/Somewhat Negative</td>
<td>High</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Impact</th>
<th>Effect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff</td>
<td>Neutral</td>
<td>Low</td>
<td>The neutral impact is because staff will not necessarily deploy the exams for the Instructors and/or interact with learners to troubleshoot issues. Staff will likely interact with MacPherson on behalf of the Instructors to setup training times or lay the groundwork for Instructors to troubleshoot issues. It is a low impact as there will likely be some changes in a staff member’s process, but not enough to cause drastic changes. There will still need to be communication done to talk about the proposed changes to proctoring.</td>
</tr>
<tr>
<td>MacPherson Institute</td>
<td>Neutral</td>
<td>High</td>
<td>The neutral impact is because MacPherson will not likely have any benefits and/or drawbacks in using the system. Their role will likely be that of support Instructors and learners as they use the tool. There will be some training within MacPherson to research the pedagogy of using online proctoring tools and to propose alternative methods of examinations to Instructors.</td>
</tr>
<tr>
<td>Student Accessibility Services</td>
<td>Neutral</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

**Positive, Negative, Neutral**  
*High, Medium, Low

### Stakeholders Involved in Developing This Proposal

<table>
<thead>
<tr>
<th>Stakeholder Names</th>
<th>Area Representing (Faculty, Dept, Committee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim Dej, Acting Vice-Provost (Faculty)</td>
<td>Provost and Vice-President (Academic)</td>
</tr>
<tr>
<td>Gayleen Gray, AVP &amp; CTO</td>
<td>UTS</td>
</tr>
<tr>
<td>Randy Walinga, Manager ITS</td>
<td>DeGroote School of Business</td>
</tr>
<tr>
<td>Jon Kruithof, Lead Educational Developer – Learning Technologies Systems</td>
<td>MacPherson Institute</td>
</tr>
<tr>
<td>Trudi Wright, Privacy and Records Management Specialist</td>
<td>University Secretariat</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Allison Drew-Hassling, Director</th>
<th>Student Affairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim Mason, Academic Integrity Officer</td>
<td>Provost and Vice-President (Academic)</td>
</tr>
<tr>
<td>Mei-Ju Shih, Program Coordinator</td>
<td>Student Accessibility Services</td>
</tr>
<tr>
<td>Alex Biliski, Business Systems Analyst</td>
<td>DeGroote School of Business</td>
</tr>
</tbody>
</table>

**Steering committee members**

In addition to the project sponsors and the project team, the steering committee includes:

- Bernadette Belan, Senior Associate Registrar, Scheduling and Examinations Registrar’s Office
- Anne Dwyer, Program Coordinator, Centre for Continuing Education
- Steve Hranilovic, Associate Dean Engineering, Faculty of Engineering
- Michael Farquharson, Associate Dean Science, Faculty of Science
- Maria White, Assistance Dean (Studies), Faculty of Engineering

**Appendix A: Student Accessibility Services Notes re. Assistive Technology (AT) Options and Accommodation Needs**

Review completed by: Mei-Ju Shih (SAS Program Coordinator) & Elizabeth Iarusci (SAS, Testing Centre Coordinator)

**Overall Feedback**

**AT compatibility:**

Based upon the information provided by each company, SAS determined that Respondus provides the best AT compatibility as they pass user ability review in Jaws, Zoomtext, NVDA and others; HonorLock was second in ranking as it passed Jaw review. In addition, SAS also reviewed material from Proctorio. Proctorio was only assess for NVDA. Proctorio was ranked third by SAS, and eliminated from the spring / summer pilot.
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Accommodation Process:

In all three documents, SAS didn't find evident information on accommodation implementation, other than HonorLock has description about extra time. Both Proctorio and Respondus offer features that simulate an in-person setting such as alarming students before time runs out etc. Proctorio also provides very clear information in product design for low vision users.

It would be helpful to confirm what each company can offer in this regard. Both Proctorio and Respondus offer features that simulate an in-person setting such as alarming students before time runs out etc. Proctorio also provides very clear information in product design for low vision users.

Web Accessibility Content Guideline in ranking:

Proctorio, HonorLock and Respondus (No description but pass most user ability review). Overall ranking: Respondus>HonorLock>Proctorio.

Document Reviewed:

The Voluntary Product Accessibility Template (VPAT) provided by the vendors.

Key criteria for accessibility needs:

<table>
<thead>
<tr>
<th></th>
<th>HonorLock</th>
<th>Proctorio</th>
<th>Respondus</th>
</tr>
</thead>
<tbody>
<tr>
<td>User ability/Compatibility with current AT software</td>
<td>VPAT review by Jaws, 2019.</td>
<td>VPAT review by NVDA</td>
<td>VPAT review by Jaws, Zoomtext, NVDA and other AT software. AT software works well with lockdown browser. *best option for AT compatibility</td>
</tr>
<tr>
<td>Web Accessibility</td>
<td>WCAG2.0</td>
<td>WCAG2.0,WCAG2.1</td>
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Online Proctoring Fall 2020

<table>
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<tr>
<th>Other: Accommodation related information</th>
<th>Vendor provided description of extra time</th>
<th>N/A</th>
<th>N/A</th>
</tr>
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</table>

AT software compatibility (Jaws, Zoomtext as the main requirements) and Web Accessibility

Outcome

Respondus (most compatible) > HonorLock (work with Jaws) > Proctorio (NVDA tested)

Concerns

- Subject compatibility: students may use other softwares such as Math Type for Math courses.
- Some AT software may not work well with specific browsers. To be reviewed.
- SAS to review the accommodation implementation for online proctoring software.