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Assessing Inspera Assessment

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Assessing Inspera Assessment

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Submitted by

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Final Report

To the WMU University Assessment Steering Committee with copies to the: FCL Department Chair, HCoB Associate Dean for Graduate Studies, HCoB Associate Dean for Undergraduate Studies, HCoB Director of Information Technology, WMUx Associate Director of Educational Technology, Director of Strategic Project & Service Management, Associate Dean of Students, and WMU Program Manager Assessment

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Abstract

This report details the 2023 Inspera Assessment software pilot test to improve assessment within WMU finance courses. It explains the motivation for this pilot and outlines the need for better assessment tools at WMU. The report details cumbersome elements of the approval process needed to launch this pilot and identifies problems encountered during the pilot. Attribution for this pilot failure is estimated at approximately four fifths on Inspera with one fifth on WMU. The pilot did not meet any of the three objectives and only partially met six of the ten outcomes. Related to assessment practices, the report illustrates that non-business course students are nearly five times as likely to be held responsible for academic misconduct relative to students in business courses. The report offers potential reasons for underreporting of academic misconduct within HCoB. Overall, this report presents six recommendations to improve assessment at WMU.

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1. Introduction

Standard lockdown browser options at WMU severely limit summative assessment options. WMU instructors typically deliver secure exams in the D2L/Brightspace learning management system within the Respondus Lockdown Browser. Unfortunately, this platform limits what applications students may access during an exam. For example, students may only access a generic spreadsheet with minimal calculation options rather than MS Excel during exams. Consequently, in quantitative disciplines such as finance, a robust bring your own device (BYOD) calculation tool is typically required. Calculator selection is an important pedagogical consideration as it dictates a substantial portion of pedagogy approach since the teaching and testing must align. Using the same calculation tool in both settings is important to best focus students on the primary course content rather than on learning duplicate syntax of various calculators.

Historically, finance instructors have required students to purchase a hand-held financial calculator such as the Texas Instruments BA 2 Plus Professional. This model has good functionality and also lacks network connectivity thereby mitigating the potential for academic misconduct during examinations. However, a BYOD handheld calculator requires an additional expense and is unlikely to be used outside of an academic setting. If WMU hopes to build human capital by augmenting the marketable skills of our students, we must seriously consider replacing antiquated calculator technology with modern tools that are widely used in the workplace.

A computer-based calculation tool such as MS Excel offers great potential to tackle more complex problems and build skills demanded in the workplace. MS Excel is effectively the de facto standard spreadsheet used in business. MS Excel includes specific finance functions such as net present value (NPV), internal rate of return (IRR), and effective rate (EFFECT). The Microsoft financial functions reference page lists 57 unique finance functions as of 2013 and later versions of MS Excel. Additionally, MS Excel also provides access to more general tools such as the “goal seek” iterative function, which is extremely useful in solving complex math problems such as those encountered in finance courses. Excel is widely employed in industry, with many different add-on packages, and includes standardized import/export options for the great majority of other data management systems. Additionally, doing finance with other modern spreadsheets such as Google Sheets can be learned much more quickly when one is already proficient with MS Excel.

Unfortunately, accessing MS Excel requires a computer with network capacity so therefore introduces challenges regarding academic integrity.

In March 2020, WMU abruptly shifted to online substantially disrupting course delivery and amplifying the need for digital assessment. To address this issue, the primary investigator (PI) and other HCoB faculty started exploring digital assessment platforms. After failed attempts with Respondus, Proctorio, and Top Hat, the PI eventually found the versatile digital assessment platform known as Inspera Assessment. The Norwegian company Inspera AS reports the service to be widely used with end users in over 160 countries.[1] The PI sought funding for a project to explore this service with applications to three WMU grant sources, specifically the Haworth College of Business (HCoB) Dean's Office, the University Assessment Steering Committee, and the WMU Office of Research and Innovation (ORI). The Haworth College of Business Dean's Office awarded the grant titled "Pilot Test of Inspera Assessment" to allow for a limited evaluation of the service.[2] The Assessment Mini Grant #08-2023 titled "Assessing Inspera Assessment" from the University Assessment Steering Committee facilitated the assessment and documentation of this pilot test.[3] The Support for Faculty Scholars Award application to ORI was not funded. This report details the evaluation of Inspera Assessment and is organized with sections focused on Background, Objectives and Outcomes, Assessment Goal Alignment, Recommendations, and Conclusion. This report thereby fulfils the primary requirement of the 2023 Assessment Mini Grant Program award 08-2023 "Assessing Inspera Assessment".

2. Background

The background section details five phases related to digital assessment of students at WMU. The identification section provides some history regarding the Department of Finance and Commercial Law (FCL) efforts to find a suitable assessment platform for exams. The identification phase started in March 2020 with changes to education practices precipitated by the COVID-19 global pandemic. The identification phase ended in late July 2022 with the finding that a formal evaluation of Inspera Assessment was warranted. The review phase spanned August 2022 until

[1] On a mission to reinvent educational assessment, Inspera AS, https://www.inspera.com/about Referenced 1JUN23
[2] Thanks to Associate Dean Newell for supporting this grant in order to address Hyflex MBA Program concerns.
[3] Thanks to the committee for recognizing the potential value of a documented assessment project at WMU.

December 2022, which focused on the WMU-mandated legal and software reviews. The planning phase covered early December 2022 until January 2023 when preparations were completed for the initial cohort of WMU students. The test phase ran from January 2023 through March 2023 when the pilot was terminated due to issues with Inspera services. The report phase began in March 2023 upon termination of services with a full refund and concludes when the final draft of this report is published. The primary focus throughout these phases was to identify and implement software that could improve assessment at WMU. See Appendix A for a detailed timeline of each phase.

2.1. Identification

Due to course changes prompted by COVID-19, the primary investigator (PI) worked to implement new digital assessment solutions. The PI assisted with exploration of Proctorio from June to November 2020, then Respondus from June 2021 to June 2022, next Top Hat in June 2022, and started exploring Inspera in July 2022. Identification of a robust COVID-19 era exam platform that works well for WMU finance courses has been a challenge.

2.2. Review

The identification phase shifted into the review phase when the PI determined that Inspera Assessment presented a service meeting the needs of WMU finance courses. The WMU contract review process for software required the submission of the Contracts for Goods and Services Review Checklist. The two largest components of this checklist included an extensive technical review and a legal review. Both review areas started with two Inspera contract documents. The terms and conditions document outlined the core terms of the contract. The data processing agreement provided great detail on how student information would be retained and secured.

Within the legal and IT reviews of these two documents, additional concerns were noted that required additional review or approval. Table 1 summarizes the formal steps needed to finalize the contract documents.

Table 1: Approval Summary

Approval	Approver	Start Date	Status Date	Status

HCoB IT	Alex Roelandt	1AUG22	1AUG22	Approved
WMU IT	Adam Newsted	1AUG22	12OCT22	Conditionally approved
Export control	Jim Center	18AUG22	18AUG22	Approved
Legal	Sarah Beuker	26AUG22	2DEC22	Approved
MarCom	Kim Nelson	4OCT22	31OCT22	Approved
Reporting & tax	Carol LaLonde	4OCT22	8DEC22	Approved
Insurance	Michele Cole	4OCT22	17NOV22	Approved
Registrar	Carrie Cumming	13OCT22	14NOV22	Acquiesced
HCoB Dean	Satish Deshpande	2DEC22	2DEC22	Approved
WMU final	Michele Cole	8DEC22	9DEC22	Signed
Final contract	CEO of Inspera	9DEC22	12DEC22	Countersigned

2.2.1. IT Review

HCoB IT provided the PI with guidance to initiate the WMU software review process on August 1st 2022. The WMU IT review of Inspera Assessment required additional documentation including the Higher Education Community Vendor Assessment Toolkit (HECVAT) and the Voluntary Product Accessibility Template (VPAT). The WMU IT review took 72 days to produce a conditional approval subject to the following:

- Implement Bronco NetID Single Sign-On Authentication (Mandatory)
- Ensure Accessibility and Equitable Access
- Secure Student Data
- Contract Termination Procedure and Data Security Plan

2.2.2. Legal Review

The PI submitted the legal review request on August 26th 2022. The WMU legal review of the Inspera contract documents response came 31 days later. This response required contract changes and additional reviews as given in the Table 1 approval summary. Once the additional reviews were completed, the PI resubmitted the packet to WMU legal on December 2nd 2022. The second legal review resulted in a conditional approval subject to the following:

- Get a written statement (an email is sufficient) from your Dean, stating that your Department/College will bear the increased costs if out-of-state litigation arises.

2.3. Planning

With approval from the HCoB Dean on December 2nd 2022, we moved from the review phase into the planning phase due to time pressure. While the final contract signature requirements had not yet been completed, planning could not wait. WMU structured the pilot test of Inspera Assessment with training services and 280 licenses covering the 2023 calendar year. Table 2 outlines the one-year assessment plan that included four courses, seven sections, 235 students, 18 tests, 880 individual assessments, three academic programs, and two instructors.

Table 2: Assessment Plan

Course	Sections	Expected students	Expected tests	Expected assessments	Program	Instructor
FIN3100	1	30	3	90	BBA	PI
FIN3200	3	135	4	540	BBA	PI
MBA6004	1	30	3	90	MBA	PI
FIN6450	Up to 2	Up to 40	Up to 4	Up to 160	MSF	Other
Totals	7	235	18	880	Three	Two

While the greatest need for improved testing capacity was identified in the MBA Hyflex program, the pilot test was structured more broadly to ensure reliability. To rigorously evaluate Inspera Assessment, a sufficient sample size was needed to capture edge cases where we might best discover limitations. As such, a large number of undergraduates were included as this pilot was intended to evaluate MS Excel enabled exam capability in up to three different programs. With approximately 880 total anticipated assessments, we expected sufficient variance with which to evaluate the utility and reliability of the Inspera platform. Some additional licenses were allocated to allow for instances of course over-enrollment and to allow some additional small-scale evaluation outside of regular courses.

During the planning phase for Spring 2023, we encountered an issue of catastrophic severity detailed later in Table 3. Inspera had presented the Safe Exam Browser (SEB) as the best solution during the review phase only to acknowledge serious incompatibility issues with Apple devices during the planning phase. This forced a change of approach to the pilot where Inspera replaced SEB with IEP set to open access mode. This IEP solution did not offer the same level of exam security compared to SEB but Inspera did make assurances that it would work to improve the

software. Through a combination of IEP measures such as screen recording and ID checks, the IEP structure promised a solution that was at least as good as the current paradigm.

The Spring 2023 semester started with 96 WMU students required to use IEP totaling 34.3% of the 280 licenses allocated for the pilot study. Unfortunately, a second catastrophic issue occurred during the planning phase when Inspera provided WMU with the newest version of IEP on December 21st 2022. This issue was not discovered until the test phase and resulted in extensive problems related to Apple devices. More information related to this issue is found in section 4.1.3. Laptop Specification Alignment. Other issues of lesser importance also adversely impacted the planning phase as detailed in Appendix A.

2.4. Test

With the Inspera Assessment pilot planning phase complete on January 19th, 2023, we moved into the test phase. Unfortunately, a major confounding event interfered with this phase when the information technology service disruption hit WMU on January 20th, 2023. This service disruption directly and severely impacted the PI as one of only three HCoB faculty members with a compromised WMU-issued work computer. Additionally, the PI lost access to all saved files for approximately three weeks. The HCoB IT and WMU OIT were also unable to provide planned support during this period resulting in compromised IT support during the test period. The pilot test phase was compromised by this event but we continued on.

The primary elements of this report are comprised of events and feedback collected during the test phase of the pilot test of Inspera Assessment. Only 67 of 94 students (71%) were able to complete the IEP systems checks on their devices for the practice exam. Only 51 of 81 (63%) of FIN3200 students and zero of ten (0%) of MBA6004 students managed to submit exams using IEP. Inspera acknowledged the issues and offered a full refund of the contract cost, which WMU accepted. Due to the serious issues detailed in this report, WMU terminated the pilot on March 2nd 2023.

2.5. Report

Upon termination of the pilot, we moved into the report phase. This phase included collection of data, analysis, review by experts, and writing the report. This report merely serves as a reference to facilitate actions to improve WMU processes related to assessment. Either HCoB and/or WMU may implement post-project action related to the unaddressed issues noted in this report. Some items can be handled within HCoB while other actions would likely require action by the WMU Faculty Senate.[4] The recommendation section of this report provides detail.

3. Objectives and Outcomes

This pilot was initiated to assess the utility of the Inspera Assessment platform in finance courses. Specifically, the PI selected Inspera Assessment to help integrate MS Excel into the finance curriculum. The PI identified three major objectives aligned with the utility assessment along with several outcomes for each objective. WMU terminated the pilot before any of the three objectives were achieved. Consequently, this section begins with a summary of issues that contributed to the pilot failure. Software failure analysis lacks a generally accepted technique since issue identification and rating is not an exact science. This report employs the Nielsen scale to estimate severity ratings for the issues as follows: 4 – catastrophe, 3 – major, 2 – minor, 1 – cosmetic, 0 – not a usability problem.[5] The PI was the sole rater of issues and Nielsen scale severity. See Tables 3 and 4 for summaries of Inspera and WMU respectively.

Table 3: Inspera Issues

Issue	Phase	Severity
Inspera presented the SEB platform without acknowledging limitations for Apple devices	Review	4
WMU received the wrong version of IEP	Planning	4
Could not disable unnecessary IEP system checks	Planning	2
Inspera Assessment user interface challenges	Planning	2
Error messages provide little direction	Planning	2

[4] Thanks to Karen Stokes Chapo for identifying relevant involvement of the WMU Faculty Senate.
[5] Severity Ratings for Usability Problems, Nielsen Norman Group, https://www.nngroup.com/articles/how-to-rate-the-severity-of-usability-problems/ Referenced 1JUN23

SSO handshake failure on exam day	Assessment	4
Inspera Help Desk does not provide direct support to students	Assessment	3
Delays in acknowledgement of IEP problems	Assessment	3
Mistakenly deleted data	Assessment	2
Mistaken billing issues	Assessment	1

Table 4: WMU Issues

Issue	**Phase**	**Severity**
Personnel limitations for software testing	All	2
Technology compliance review process delays and inefficiency	Review	2
Laptop standards are only recommendations	Review	2
WMU IT Help Desk was not integrated into the technology compliance review process	Planning	2
HCoB computer labs did not install IEP ahead of exams	Planning	2
Network service disruption beginning 20JAN23	Assessment	3

Table 5 attempts to quantify institutional responsibility using the issues listed above to produce six metrics related to the pilot failure. Where WMU had five issues identified, Inspera had ten. While the Nielsen rating is ordinal, if one assumes interval ratings, the overall severity metric can be derived by totaling the points. In an attempt to estimate overall responsibility this strong assumption is made as both Inspera and WMU were responsible for issues in all three phases of the pilot. Where WMU had the most severe impact listed as major, Inspera had three catastrophic failures with one in each phase. Catastrophic failures are uniquely identified in each phase since this level of severity directly risks success of the overall pilot. Again, WMU's share of responsibility for the pilot failure based on six metrics is a rough estimate.

Table 5: WMU Responsibility Metrics

Metric	**Inspera**	**WMU**	**WMU/total**
Overall issue count	10	5	33.3%
Overall issue score	27	13	32.5%

Phases with issues	3	3	50%
Catastrophic review issues	1	0	0%
Catastrophic planning issues	1	0	0%
Catastrophic assessment issues	1	0	0%
Mean of six metrics	7.2	3.5	19.3%

Table 5 suggests that WMU could be assigned approximately one fifth of the responsibility for the pilot failure. Of this responsibility assignment, the network disruption beginning on January 20th 2023 was the biggest single factor. Conversely, Table 5 implies that roughly four fifths of the failure responsibility can be attributed to Inspera. Due to these failures, the pilot was terminated two months into a twelve-month contract. The pilot did not meet any of the objectives and achieved only some of the outcomes.

3.1. Technical Objective

Ensure that Inspera Assessment integrates effectively with WMU systems and in full compliance with WMU Office of Information Technology (OIT) requirements. This report examines four outcomes tied to the technical objective.

3.1.1. Single Sign On (SSO)

The SSO did take time and persistence to eventually implement. This was partly due to the break between the Fall 2022 semester and the Spring 2023 semester but also staffing limitations in WMU OIT. Ultimately, WMU students were able to use their Bronco Net ID and password to access Inspera for exams. This step was completed ahead of the practice exams but the SSO failed hours prior to the first MBA 6004 exam. Inspera initially blamed the failure on WMU OIT. WMU OIT determined that, *"The metadata that was mistakenly deleted was used by all [of the Inspera] clients that do SSO and they all broke around the same time as [WMU]."* Inspera ultimately determined that the SSO failure was due to a third party that Inspera had contracted. While SSO was achieved with some delays on

WMU's end, the SSO became unavailable at a critical period and failed to allow access during an examination. The SSO outcome was therefore implemented but was not stable so might be charitably classified as a mixed result.

3.1.2. Voluntary Product Accessibility Template (VPAT)

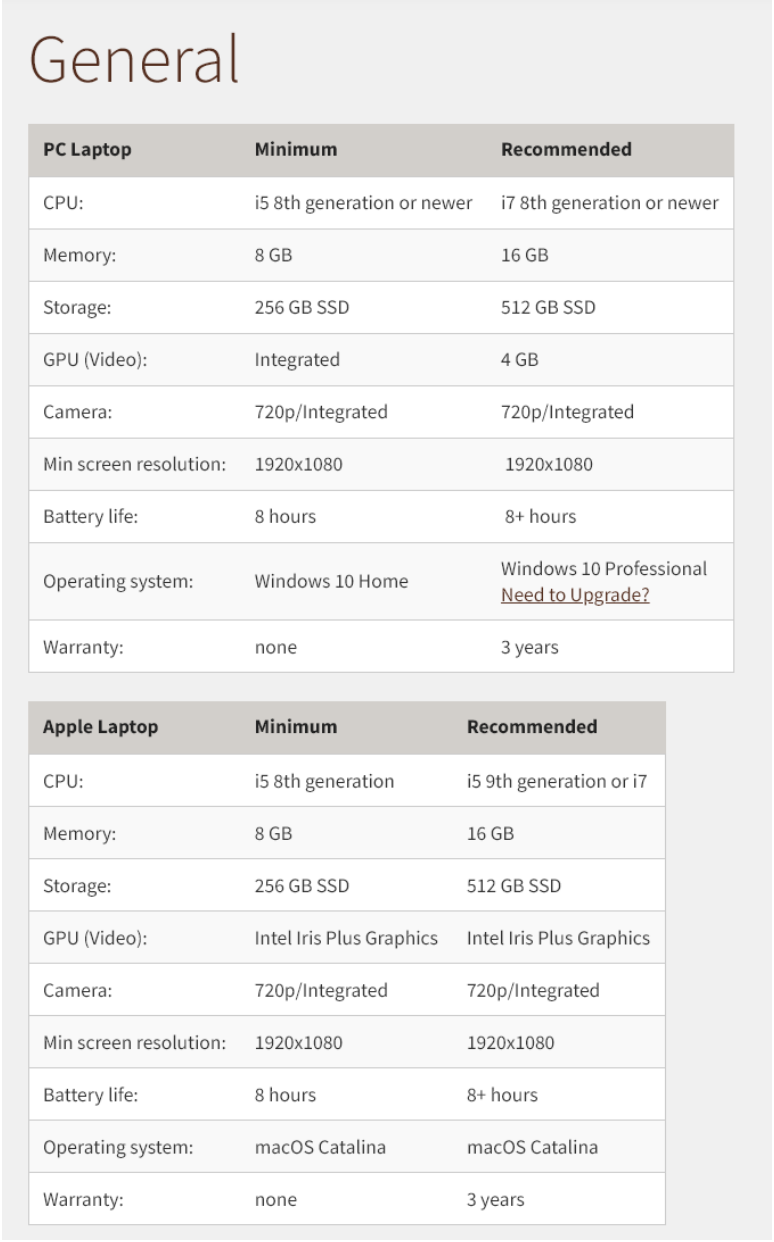
Inspera was in the process of completing the VPAT during the WMU technology compliance review process. The WMU Technology Compliance Review granted conditional approval with partial compliance on October 12th 2022. The conditional approval required that Inspera submit the VPAT to WMU when it was completed. However, the pilot was suspended approximately two months into the twelve-month contract period prior to Inspera submitting a complete VPAT. Consequently, Inspera did not meet this outcome during the pilot.

3.1.3. Laptop Specification

An important technical objective outcome of the pilot was to assess the alignment between Inspera software and WMU BYOD laptop recommendations. WMU periodically updates laptop recommendations for students.[6] This university-level guidance included both a minimum and a recommended standard for both PC and Apple laptops. Figure 1 provides the WMU recommendations during the pilot period.

Figure 1: WMU Laptop Recommendations

[6] Laptop Recommendations, Western Michigan University, https://wmich.edu/laptop referenced 20MAY23.



General

PC Laptop	Minimum	Recommended
CPU:	i5 8th generation or newer	i7 8th generation or newer
Memory:	8 GB	16 GB
Storage:	256 GB SSD	512 GB SSD
GPU (Video):	Integrated	4 GB
Camera:	720p/Integrated	720p/Integrated
Min screen resolution:	1920x1080	1920x1080
Battery life:	8 hours	8+ hours
Operating system:	Windows 10 Home	Windows 10 Professional Need to Upgrade?
Warranty:	none	3 years

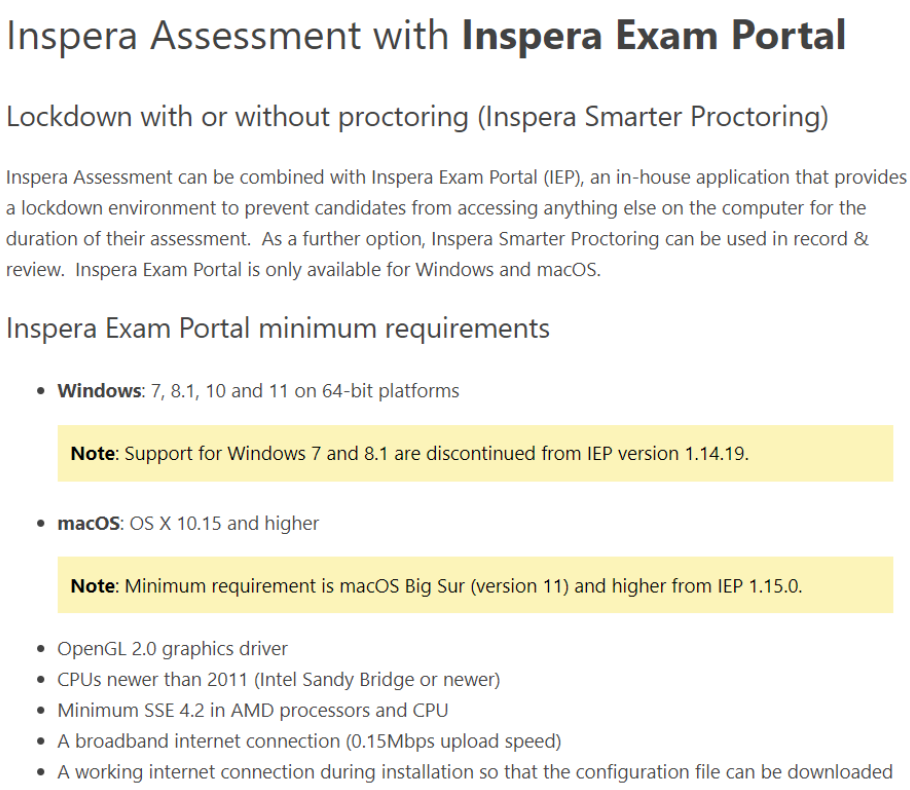
Apple Laptop	Minimum	Recommended
CPU:	i5 8th generation	i5 9th generation or i7
Memory:	8 GB	16 GB
Storage:	256 GB SSD	512 GB SSD
GPU (Video):	Intel Iris Plus Graphics	Intel Iris Plus Graphics
Camera:	720p/Integrated	720p/Integrated
Min screen resolution:	1920x1080	1920x1080
Battery life:	8 hours	8+ hours
Operating system:	macOS Catalina	macOS Catalina
Warranty:	none	3 years

HCoB IT and the PI held a meeting with Inspera on December 21st 2022, to ensure that the Inspera software was compatible with WMU's minimum laptop recommendations. Internet archival records prove that WMU listed the minimum requirement as macOS Catalina from July 19th 2020 through February 4th 2023.[7] The WMU Director of Strategic Project and Service Management reported that the macOS Catalina version was listed until

[7] Laptop Recommendations, Wayback Machine Internet Archive, https://web.archive.org/web/20221006173107/https://wmich.edu/laptop referenced 7JUN23

March 20th, 2023 which extended beyond the active pilot testing phase. The macOS version 10.15 was released as Catalina in October 2019 with updates one to seven continuing until July 2022. Figure 2 provides the Inspera Exam Portal minimum requirements referenced during this meeting.[8]

Figure 2: IEP Minimum Requirements



Inspera Assessment with **Inspera Exam Portal**

Lockdown with or without proctoring (Inspera Smarter Proctoring)

Inspera Assessment can be combined with Inspera Exam Portal (IEP), an in-house application that provides a lockdown environment to prevent candidates from accessing anything else on the computer for the duration of their assessment. As a further option, Inspera Smarter Proctoring can be used in record & review. Inspera Exam Portal is only available for Windows and macOS.

Inspera Exam Portal minimum requirements

- **Windows**: 7, 8.1, 10 and 11 on 64-bit platforms

  Note: Support for Windows 7 and 8.1 are discontinued from IEP version 1.14.19.

- **macOS**: OS X 10.15 and higher

  Note: Minimum requirement is macOS Big Sur (version 11) and higher from IEP 1.15.0.

- OpenGL 2.0 graphics driver
- CPUs newer than 2011 (Intel Sandy Bridge or newer)
- Minimum SSE 4.2 in AMD processors and CPU
- A broadband internet connection (0.15Mbps upload speed)
- A working internet connection during installation so that the configuration file can be downloaded

HCoB IT identified that IEP requirements for Windows 10 or macOS 10.15 aligned with WMU requirements. Unfortunately, Inspera provided WMU with a link to IEP 1.15 requiring macOS 11 Big Sur rather than IEP 1.14 requiring macOS 10.15 Catalina. This error caused many WMU students to encounter errors when attempting to install IEP on their Apple devices. Inspera did not recognize this problem and even resisted acknowledging this problem in the critical period between the practice exam and the first live exam. Inspera did eventually provide IEP 1.14 shortly before the first live exam but

[8] System Requirements, Inspera Help Center, https://support.inspera.com/hc/en-us/articles/360018510132-System-requirements referenced 20MAY23

without adequate tech support to implement for most of the impacted WMU students. Students with PC devices had laptop specification alignment while students with Apple devices did not. The Inspera Assessment pilot therefore did not achieve the laptop specification alignment outcome.

3.1.4. Full Approval

The final outcome for the technical objective was replacing the WMU Technology Compliance Review response of "Conditionally Approved" with full approval. This outcome was not achieved prior to termination of the Inspera Assessment pilot.

3.2. Implementation Objective

The implementation objective focused on ensuring that WMU students can access MS Excel during exams with uniform academic integrity safeguards in place. The PI identified three outcomes for the implementation objective.

3.2.1. Prior Access

Ensuring WMU student access to Inspera Assessment prior to exams was a critical preparation step. While universal access was likely not possible due to edge cases, getting to at least 90% IEP access should have been entirely achievable. We created a mandatory practice exam to help ensure WMU student access and some experience using the IEP system ahead of exam day.

Unfortunately, attempts to ensure IEP access did not go well with numerous failed attempts to get resolution form the Inspera Help Desk. The PI submitted the first help desk ticket (#16656) to Inspera on January 27th 2023 and the last ticket (#16689) on January 30th 2023. The PI sent 12 of the 34 tickets (35.3%) that the Inspera Help Desk received during this period. Even at this point, the Inspera Help Desk refused to acknowledge a catastrophic usability problem with the response, "… we do not have any indications that there are any systematic issues." Table 6 shows that 18 of 96 students (18.8%) reported problems

involving access to Inspera. The Inspera Help Desk was not very helpful as only 6 of 18 issues were resolved (33.3%). At least 11 of the 18 issues (61.1%) appeared on Apple devices. While only 18 students formally reported problems, it appeared that many more students encountered IEP access problems. As such, the target of 90% prior access to IEP outcome was not achieved.

Table 6: IEP User Issues

#	Response Date	Inspera Ticket	Issue	Hardware	OS	Resolved
1	21JAN22	N/A	device does not meet specifications			N
2	26JAN22	N/A	PIN code	Macbook	Catalina	Y
3	26JAN22	need more info	IEP will not install	Apple		Y
4	27JAN22	N/A	device does not meet specifications	Chromebook	Linux	Y
5	27JAN22	16687	IEP will not install	Apple		N
6	27JAN22	16656	IEP will not install	Macbook pro	Monterey 12.5.1	N
7	28JAN22	need more info	Wrong browser error message			N
8	28JAN22	16660	IEP will not install	Apple		Y
9	28JAN22	need more info	IEP will not install	Apple		N
10	28JAN22	16659	IEP will not install	Macbook	MacOS 11.2	N
11	28JAN22	N	device does not meet specifications			Y
12	29JAN22	16664	microphone	Not an Apple		N
13	29JAN22	16662	IEP will not install	Macbook air	Mojave 10.1	N
14	29JAN22	16665	IEP will not install	Macbook	Mojave 10.14	Y

15	30JAN22	16680	IEP will not install	Apple		N
16	30JAN22	16688	IEP will not install	Macbook	Monterey 12.5	N
17	30JAN22	16686	Unknown lockdown browser error			N
18	30JAN22	16684	Lockdown browser lost focus error	HP pavilion	Windows 10	N

3.2.2. Exam Access

Access to Inspera Assessment during live examinations was critical to the success of the pilot. Specifically, IEP was intended to provide an MS Excel-enabled exam in conjunction with monitoring to deter academic misconduct. For the initial semester, we had a goal of 90% of the students taking exams using IEP on their personal laptops. This 10% allowance was planned for students with situations such as accommodations through Disability Student Services (DSS), no access to a laptop that met the WMU-recommended standard, and other edge case situations that would preclude access to IEP during the live exams. Unfortunately, a confluence of issues negatively impacted student access with only 53 of 92 students (just 57.6%) completing exams using IEP. The first exam in FIN3200 had a 65.4% access rate and the first exam in MBA6004 had 0% access rate. Students with IEP access had MS Excel access during the exam. Students that did not have access to IEP also had access to MS Excel during the exam but without any monitoring to help ensure academic integrity. Please see the summary of issues noted at the beginning of section 4 for additional detail regarding issues related to this pilot. MS Excel access within IEP was not achieved at the course level.

3.2.3. Academic Integrity

Inspera Assessment promised consistent academic integrity controls under a standard method except for exceptional situations. Exceptional circumstances may include Disability Services for Students (DSS) accommodations, a student not having access to a

WMU-recommended laptop, or other edge case situations. Academic integrity standards were not applied in consistent manner for four distinct reasons: IEP installation problems, IEP access problems, IEP errors during the exam, and Inspera data retention failures. While the first three problems here are listed in prior sections, the data retention failure deserves explanation. Inspera confirmed on December 28th 2022 that, "… ISP recordings (screen recordings and security flags) will now be deleted 1 year after submission (and not after grading is completed)." However, Inspera explained on March 27th 2023 that video recordings of all exams taken by WMU students were mistakenly deleted due to their failure to adjust settings properly. Since IEP failed to work in MBA6004 and the Inspera pilot was terminated March 2nd 2023, all but the first FIN3200 exam provided students with access to MS Excel and therefore the open internet but without any screen monitoring.

Appendix B presents evidence of academic misconduct during FIN3200 MS Excel enabled examinations. Due to the operational failures, Inspera Assessment was not accessible to improve the academic integrity in the Spring 2023 semester. Specifically, a FIN3200 student in the Spring 2023 semester reported observing other students cheat during the final exam using the Chegg.com website. The PI requested more information from this student to initiate an academic integrity investigation but the student did not respond. The PI then conducted Google searches of selected exam questions and found multiple postings. Since the PI had created custom exam questions within the prior year and verified that Google searches would not provide answers, the PI was surprised the exam answers had been posted. While the PI did not directly observe academic misconduct during any exams in Spring 2023, Appendix B shows that custom built exam questions were posted to Chegg. Three individual students are identified as having a unique fit between their exam problem and the version posted to Chegg.

3.3. Grading Objective

The grading objective focused on how Inspera Assessment facilitates appropriate grade assignments. The PI identified three outcomes for the grading objective.

3.3.1. Timely Grading

Prompt feedback is an important element of the learning process. The Inspera Assessment platform promised to facilitate fast, effective, and fair grading for all students. The PI found that grading exams completed within IEP took approximately the same time as grading exams within the Respondus platform in D2L. Unfortunately, the technical failures noted above resulted in many FIN3200 midterm exams given on paper which required manual grading by the instructor. This manual grading took much, much longer due to the multiple paper copies. Inspera Assessment resulted in substantially slower grading compared to the alternative, resulting in a failure to achieve the timely grading outcome.

3.3.2. Consistent Grading

Fair grading is an essential element of examinations and the PI commits to grading all students in a course to the same standard of performance. Unfortunately, IEP reliability issues resulted in inconsistent exams. Some FIN3200 students took paper-based exams with no monitoring. Most FIN3200 students took exams using IEP with monitoring. As such, students with IEP had stronger incentives to adhere to WMU academic integrity standards than did students without IEP. However, Appendix B shows evidence of both paper copies of the exam and screen shots of the exam so it appears that students took pictures in both formats. As such, it is entirely possible that not all students were graded to the same standard of performance. While directly blaming Inspera Assessment for WMU students engaging in academic misconduct would appear to be overstepping, logic would suggest that IEP failures did contribute to inconsistent grading outcomes in the two FIN3200 courses. The evidence suggests that Inspera Assessment did not yield the consistent grading outcome.

3.3.3. Assessment Alignment

Good alignment of course content with examinations is necessary for assessment of learning. Inspera Assessment promised to facilitate better alignment between course

content and examinations by enabling MS Excel during exams. Since MS Excel access during a secure exam had not been possible without Inspera Assessment, the PI hoped that content and exam alignment would improve with reliable access to MS Excel. With only one exam partially completed with IEP, the PI was not able to evaluate this outcome.

4. Assessment Goal Alignment

This report addresses five HCoB assessment goals: preliminary assessment of the HCoB laptop requirement, formative assessment of new finance course offerings, summative assessment in the HCoB Hyflex MBA program format, formative assessment of integrating MS Excel into WMU finance curriculum, and assurance of learning assessment needed for AACSB accreditation. In December 2022, HCoB signed a $4940 contract with Inspera for direct costs of 280 licenses and training support for a one-year pilot study titled “Pilot Test of Inspera Assessment”. This section provides assessment notes related to the five HCoB assessment goals. This assessment of the pilot with respect to HCoB assessment goals alignment is intended for the Department of Finance and Commercial Law, the Haworth College of Business, and Western Michigan University.

4.1. HCoB Laptop Requirement

HCoB established a BYOD laptop requirement for all students beginning in AY 2023-24. This laptop requirement at the college level promises to expand both curriculum engagement and accessibility for students. However, the experience with the Inspera Assessment pilot indicates that student device management is likely to be a challenge under a BYOD policy. Using third-party education software in a BYOD context can be difficult. While this pilot showed challenges with PC devices, many more issues were tied to Apple devices. HCoB IT should plan to support both students and faculty dealing with device challenges. HCoB IT should request appropriate resources in order to robustly support the transition to a BYOD laptop policy. This report offers a preliminary assessment to assist HCoB in leveraging the new BYOD laptop policy and troubleshooting the inevitable issues.

4.2. New Finance Courses

The Department of Finance and Commercial Law (FCL) is offering a new graduate degree and two new graduate certificates. The Masters of Science in Finance is the first graduate degree within the FCL department. The program has already been advertised with an MS Excel component in the financial management course. "This course introduces the Bloomberg Terminal and selected Microsoft Excel financial modelling add-ins to expand analysis of real-world business scenarios. "[9] The Finance Certificate is also within the department while Financial Technology Certificate is a joint effort with the Department of Business Information Systems. The degree and both certificates will make extensive use of MS Excel and would greatly benefit from an MS Excel enabled exam platform. Formative assessment to guide MS Excel integration into these new finance offerings was not possible with the termination of this pilot.

4.3. Hyflex

The Inspera pilot grant funding came from the Associate Dean of Graduate Studies specifically to support the WMU Hyflex MBA program format. The Hyflex structure at HCoB is now several years old and offers MBA courses that are delivered simultaneously in-person and online. The Hyflex format requires that students have remote options for curriculum and examinations. However, the graduate faculty note a serious challenge in delivering summative assessments where some students are in the classroom and others are online. Facilitating remote testing with MS Excel is particularly important for the finance graduate classroom. The pilot failed to demonstrate a viable assessment platform for MS Excel enabled exams within a Hyflex environment. However, this report does illustrate some of the challenges with digital assessment in a Hyflex environment.

4.4. MS Excel

Throughout the WMU finance curriculum, Inspera Assessment promised access to MS Excel during exams while mitigating the potential for academic misconduct. Adoption of MS Excel

[9] Western Michigan University: Where versatile finance professionals are made, Study International, https://www.studyinternational.com/news/western-michigan-university-where-versatile-finance-professionals-are-made/ Referenced 13JUN23

promised to help maximize the impact of instruction time, standardize the curriculum, and more directly link theory with practice. Using MS Excel as a highly versatile calculation tool could help students tackle more complex finance problems. Standardizing curriculum could produce synergies when students develop MS Excel finance skills in introductory courses that directly apply to more advanced courses. Using MS Excel in the classroom also holds potential to improve linkage between theory and practice since the business world widely employs MS Excel as the de facto standard spreadsheet. Inspera Assessment promised secure MS Excel-enabled exams that would allow adoption of MS Excel as a course standard calculation tool. This ability at the course level would also allow finance instructors to employ MS Excel as a standard calculation tool throughout the finance curriculum at the program level. This formative assessment of Inspera Assessment demonstrated a failure to enable MS Excel to help improve finance curriculum at WMU.

4.5. ALC Assessment

The Haworth College of Business (HCoB) uses the Assurance of Learning Committee (ALC) to direct the assessment of learning goals as required by our accreditation body, the Association to Advance Collegiate Schools of Business (AACSB). WMU Finance courses are typically paired with the assessment of critical thinking under HCoB learning goal 7: Students will be critical thinkers. Students will identify and evaluate evidence to draw conclusions.

- Identify and describe the problem or idea
- Collect, organize, and evaluate evidence
- Conduct quantitative and/or qualitative analysis
- Construct conclusions and implications and solutions

The Inspera Assessment software promised MS Excel-enabled finance exams which can facilitate exam problems of greater complexity. MS Excel is an appropriate tool to augment critical thinking skill assessment as it is routinely used in the business world to support all four bullet points listed above. The ALC critical thinking data collection occurs every few years and is wrapped into the AACSB accreditation report. This pilot demonstrated that Inspera Assessment is not a viable means to facilitate the AACSB-required ALC critical thinking assessment at this time.

5. Recommendations

Assessment is a critical element of the university mission. This pilot focused on Inspera Assessment, a service to improve summative assessment. Given the extensive issues noted in this report, the take away recommendations are grounded in formative assessment instead. Based on findings of the pilot test of Inspera Assessment, this report offers recommendations to improve the assessment paradigm at WMU. Consideration areas include review of the digital assessment platform, WMU technology issues contributing to pilot failure, the new HCoB laptop policy, and the intersection of assessment and academic integrity. Since assessment and academic integrity are interrelated, recommendations for this area are subdivided to address three areas. The first review area involves process issues at the Office of Student Rights and Responsibilities (SRR) which was formerly the Office of Student Conduct (OSC), the second review regards implementation of an AACSB-recommended college-level honor code, and the third involves digital tools to mitigate academic misconduct.

5.1. Digital Assessment Platform Review

WMU should re-evaluate its digital assessment platform options. A versatile assessment platform is needed to support WMU's mission. Specifically, a digital assessment platform is an essential part of the WMU academic excellence strategic priority. *"Academic Excellence will identify opportunities for enhancing WMU's academic programs, teaching and learning methods, and curricular offerings. They will also examine how to maintain, develop, and uplift the reputation of our programs."*[10] The existing Respondus platform lacks features needed to allow use of specific software applications such as MS Excel. Without the combination of a lockdown browser that can allow access to specific software such as MS Excel, instructors of technical topics are stuck in an assessment bind. Software tools are needed to best link theory and practice in higher education, particularly in applied fields such as business.

With limitations of current WMU assessment software, there appears to be a direct trade-off between MS Excel-enabled exams and academic integrity. Currently, it seems that the least-bad-

[10] University Strategic Plan, Western Michigan University, https://wmich.edu/strategic/2021-22-strategic-planning-process/priorities Referenced 1JUN23

option for MS Excel enabled exams in D2L appears to require custom-built open-ended algorithmic exam questions. This combination ensures that questions are: A) not in an existing test bank, B) not multiple choice, C) unique number combinations for each student. This arrangement does mitigate the potential for certain types of academic misconduct such as accessing test bank solutions or sharing answers with other test takers. However, this approach is certainly not cheat-proof due to unrestricted network access. For example, using real-time network avenues such as email, screen share, text, instant message, or any similar approach could allow another party to take the exam in real time. Another limitation is that D2L algorithmic questions cannot handle the more advanced MS Excel functions such as goal seek. Without a lockdown browser, screen monitoring, personal network device restrictions, and an honor code, there is both motive and opportunity for academic misconduct. Detecting real-time cheating given open access to a network is a real challenge.

Since the majority of the software review process is completed and Inspera has made commitments to the US marketplace, WMU might consider a second pilot test of Inspera Assessment. If a second pilot is desired, WMU should first require that Inspera address all issues noted in Table 3 to a satisfactory level. With refinement, the Inspera Assessment features that are most pertinent to a finance classroom would also seem to be useful in related areas. Other business disciplines and some engineering disciplines would seem to be the most likely candidates to use a detailed assessment platform in a manner similar to a finance course. WMU would benefit from a more comprehensive digital assessment platform but Inspera Assessment is not up to the challenge at this time. If a second pilot is undertaken, Inspera should show WMU evidence of how issues were addressed as past assurances by Inspera have not always been adequate.

5.2. WMU Technology Issues Review

This report demonstrates that Inspera is primarily responsible for the failure of this pilot. Nevertheless, WMU bears some of the responsibility as detailed in Table 4. However, staff members at WMU deserve credit for promptly addressing problems with three of six issues already resolved to an acceptable status. Furthermore, WMU is actively working to improve IT strategy

with the 2023-2027 Information Technology Strategic Plan.[11] Table 7 provides the list of WMU issues that adversely impacted the pilot, how they relate to the strategic IT plan, and a status note on the issue.

Table 7: WMU Issue Status

Issue	IT Plan	Status Note
Personnel limitations for software testing	See Goal 1	The Information Technology Strategic Plan 2023-2027 includes a review of personnel requirements. The results of this pilot suggest that WMU would benefit from more IT resources.
Technology compliance review process delays and inefficiency	See Goal 3	The IT compliance review process took 72 days to complete due to several factors including the time to gather required documentation from the vendor, security planning discussions, and the limited WMU IT staff availability required to conduct the review. Office of Information Technology leadership is actively planning and implementing more efficient practices to improve the efficiency of the process.
Laptop standards are only recommendations	See Goal 2	Completed in May 2023. HCoB initiated a new laptop requirement for AY 2023-24.[12] This issue is resolved!
WMU IT Help Desk was not integrated into the technology compliance review process	See Obj. 3.2	Identified the need for IT Help Desk integration into any enterprise-wide technology implementation project where there is an expectation for broad impact and support for university user groups. IT Help Desk leadership can evaluate the general support requirements and determine triage and escalation procedures to internal or 3rd parties.

[11] Information Technology Strategic Plan 2023-2027, Western Michigan University, Email from Alex Roelandt, Referenced 8JUN23
[12] Haworth College of Business laptop requirements, Western Michigan University, https://wmich.edu/laptop Referenced 1JUN23

HCoB computer labs did not install IEP ahead of exams	See Obj. 1.4 and Obj. 2.2	Steps to address were in progress when the WMU network disruption hit. HCoB IT did not have adequate resources to simultaneously manage the network disruption and implement a new exam software platform in the computer labs.
Network service disruption beginning 20JAN23	See Obj. 1.4	Risk mitigation began in February 2023. The WMU CIO detailed security enhancements via an email update to WMU as recovery was ongoing. WMU has since hired a new IT Security & Privacy Officer.

5.3. HCoB Laptop Policy

The new HCoB Laptop Policy creates new opportunities to link theory with practice. It also creates potential challenges for instructors and network administrators. The pilot test of Inspera Assessment provided a glimpse of challenges associated with using a BYOD approach to exams in a course. The use of third-party software in HCoB courses under a BYOD policy requires IT support from either HCoB IT or WMU IT. The pilot demonstrated how issues with a third-party application can quickly spiral into disaster when faculty and students are attempting to troubleshoot IT issues without a robust support system. This pilot demonstrated how difficult it can be for an instructor or a user to determine if the problem lies with the third party, the university, or the individual BYOD hardware/software combination. The IT issues encountered during the pilot were extensive and more support from either HCoB IT or WMU IT would have been extremely valuable. While the lack of support was clearly tied to the WMU network outage the started January 20th 2023, IT staffing needs associated with a new laptop should certainly be considered.

Many students using Apple devices were not in compliance with WMU-recommended operating systems. While attempting to troubleshoot the IEP installation problems, the PI recorded operating systems for 51 of the 84 students in FIN3200 on January 31st 2023. While the 33 devices of the remaining 33 students remain unknown, the available data does allow for some observations. Table 8 provides a summary of student devices.

Table 8: Student Devices (N=51)

Category	macOS	Windows	Other
Operating System (OS)	29	20	2
Percentage	57%	39%	4%
Outdated operating system	6	0	unknown
Percentage by operating system	21%	0%	unknown

The table provides the basis for three observations. First, with 57% of the sample using a macOS, Apple devices are widely used by HCoB students. Second, with 21% of Apple devices running an outdated macOS compared to 0% of PC devices running an outdated Windows OS, updating Apple operating systems appears to be an obstacle for HCoB students. Third, most students are able to eventually obtain a device that meets course standards even if they have a noncompliant computer such as a Chromebook. The figures in Table 8 may suggest potential challenges with bringing student devices into compliance with WMU or HCoB laptop policy standards. Table 9 includes recommendations related to the new HCoB laptop policy.

Table 9: HCoB IT Recommendations

Issue	Recommendation
Students do not know about laptop standards	Instructors should include the WMU laptop policy in their course syllabus.
Students have outdated operating systems	Instructors should refer students to the WMU Help Desk.
IT problems during high stakes time periods	Instructors can schedule HCoB IT support during live events such as exams, team projects, etc.
HCoB IT does not have resources to support	Allocate HCoB IT funds to hire a sufficient number of student IT workers.
Student device is not up to HCoB standards	HCoB IT recommends one of two options:[13] 1) Have students test software/service on their device in class.

[13] Personal correspondence, Alexander Roelandt, 7JUN23

	2) Assign "Homework" to the same effect.

5.4. Assessment and Academic Integrity

Summative assessment and academic integrity are inextricably linked within higher education since fair examinations are an essential component of coursework. COVID-19 restrictions produced a structural break in higher education generally and assessment was certainly impacted. Digital tools are now vastly more accessible to students with artificial intelligence and platforms such as Chegg disrupting traditional assessment mechanisms. Students are making extensive use of short cuts during exams that ultimately compromise the integrity of assessments. Furthermore, instructors are rarely rewarded for efforts to curb academic misconduct. Some instructors have faced negative consequences for attempts to enforce academic integrity. With gaps in the integrity of assessments, the entire premise of grade assignment is placed at risk. Academic integrity issues can have far ranging impacts on students, faculty, and staff. Among other issues, academic integrity can also contribute to an enrollment problem.[14] Extensive academic misconduct can yield bad publicity which may adversely impact enrollment. As of this writing, WMU lacks written guidance on academic integrity best practices involving high stakes assessment events such as examinations.[15]

We look to WMU academic integrity data to see how academic integrity metrics in HCoB compares to the rest of the university. The WMU Office of Student Rights and Responsibilities (SRR), formerly known as the Office of Student Conduct (OSC), provided five calendar years of academic integrity data for this report. Table 10 summarizes WMU academic integrity except for business courses over the five-year HCoB AACSB reporting period running from January 2018 until December 2022. The data shows how many academic integrity events reported to the SRR along with a breakdown of hearings by type.

The headers in Tables 10 and 11 are defined as follows. *Calendar Year* is from January 1st to December 31st. *Reported* indicates the number of misconduct cases reported by instructors where multiple charges can be assigned to an individual student. The academic integrity hearing panel

[14] Thanks to Associate Dean Yaman for identifying this important issue.
[15] The Director of Student Rights and Responsibilities notes that this issue might be a better fit for some other entity on campus as SRR does not have assessment expertise.

(*AIHP*) is the number of full five-member panels held where one or more cases are evaluated. The *Instructor Hearing* is the number of formal reviews held with only the instructor instead of the AIHP where one or more cases are evaluated. *Students Responsible* provides the number of cases where the student was either found responsible or the student accepted responsibility for an academic misconduct violation. *Percent Upheld* gives the percentage of responsible findings relative to cases reported, formally equal to *Reported* / *Students Responsible*. The *Enrollment* variable the number of students enrolled during the Spring term excluding HCoB in Table 10 and only including HCoB in Table 11.[16] *Percent Responsible* shows the percentage of cases responsible relative to enrollment, formally equal to *Students Responsible* / *Enrollment*.

The final column of Table 10 demonstrates that few WMU students were held responsible for an academic misconduct violation during the AACSB reporting period covering calendar years from 2018 to 2022.

Table 10: Non-business WMU Academic Misconduct

Calendar Year	Reported	AIHP	Instructor Hearing	Students Responsible	Percent Upheld	Enrollment	Percent Responsible
2018	272	62	20	219	80.51%	17,171	1.28%
2019	275	27	25	238	86.55%	16,785	1.42%
2020	302	46	44	240	79.47%	15,901	1.51%
2021	317	34	31	279	88.01%	14,821	1.88%
2022	230	30	31	189	82.17%	13,460	1.40%
Mean	**279**	**40**	**30**	**233**	**83.34%**	**15,628**	**1.50%**

The SRR provided the same five calendar years of academic integrity data for only business courses. Table 11 summarizes academic integrity within HCoB courses over the five-year HCoB AACSB reporting period running from January 2018 until December 2022. Each column heading is the same as Table 10 except for HCoB Enrollment which is the sum of undergraduate and graduate students at HCoB. The final column of Table 11 demonstrates that few HCoB students

[16] Enrollment, Western Michigan University, https://wmich.edu/institutionalresearch/reporting/enrollment Referenced 11JUL2023

were held responsible for an academic violation during the AACSB reporting period covering calendar years from 2018 to 2022.

Table 11: HCoB Academic Misconduct

Calendar Year	Reported	AIHP	Instructor Hearing	Students Responsible	Percent Upheld	Enrollment	Percent Responsible
2018	23	16	0	11	47.83%	3,996	0.28%
2019	18	9	0	17	94.44%	3,911	0.43%
2020	22	4	1	21	95.45%	3,591	0.58%
2021	8	8	0	8	100%	3,370	0.24%
2022	4	1	0	3	75%	3,183	0.09%
Mean	**15**	**8**	**0**	**12**	**82.55%**	**3,610**	**0.33%**

Comparing the 1.50% responsible non-business data versus the 0.33% responsible business data suggests that students in business courses are held accountable much less often. Specifically, WMU students are nearly five times as likely to be found responsible for an academic integrity violation in a non-business course compared to a business course.[17] A two-tailed T-test assuming heteroscedastic variance comparing HCoB to non-HCoB percentage of students reported, formally *Students Responsible* / *Enrollment*, gives a *p*-value of 0.0000278. With a confidence level exceeding 99.99% and a five-times effect size, there is a large difference in the likelihood of being found responsible for academic misconduct in an HCoB course compared to a non-HCoB course at WMU.

One must ask why is there such a large difference between HCoB courses and non-HCoB courses at WMU. Is the lower frequency of responsible findings within HCoB due to business students cheating less than other students? This would be unlikely given that literature shows business students typically cheat more than other university students.[18] As such, it would seem that either HCoB students are somehow anomalous compared to business students across the

[17] Likelihood is based on the value of 1.4979/.3253 = 4.6049 rounding to five.
[18] This literature is quite robust. See the 2004 Journal of Marketing Education article "Academic Integrity in the Business School Environment: I'll Get by with a Little Help from My Friends" by Chapmen, Davis, Toy, and Wright for one of many examples.

nation or there is a substantial issue of underreporting. In fact, we do see a much lower incidence of reporting by HCoB instructors. A two-tailed T-test assuming heteroscedastic variance comparing HCoB to non-HCoB percentage of students reported, formally *Reported* / *Enrollment*, gives a *p*-value of 0.0000087. Once again the confidence level exceeds 99.99% with a similar effect size.[19] Consequently, there is strong evidence for a difference in the likelihood of being reported for academic misconduct in an HCoB course compared to a non-HCoB course at WMU.

Perhaps the difference in reported case outcomes stems from the strength of cases presented to officials working in student conduct. A two-tailed T-test assuming heteroscedastic variance comparing HCoB to non-HCoB percentage of cases upheld, formally *Reported* / *Students Responsible*, gives a p-value of 0.9389456. Without a significant finding and a minimal effect size, students reported in business courses are found accountable at roughly the same rate compared to WMU students overall. Since the percentage of cases upheld are generally similar, it would seem that the strength of cases is not a deciding factor.

Another potential reason for the large difference in academic integrity reporting may be the large difference in student to instructor ratios at HCoB compared to WMU as a whole. Page 21 of the August 2023 AACSB Continuous Improvement Report details that the ratio of undergraduate students to instructors at HCoB is 147% higher than the ratio for WMU as a whole. Furthermore, the HCoB ratio of all students relative to full-time equivalent faculty is about 45% higher than peer AACSB schools. With HCoB faculty having so many more students than other faculty at WMU and at peer institutions, enforcing academic integrity standards is more challenging. It would stand to reason that larger class sizes both increase the likelihood of academic misconduct while also reducing the time available for instructors to detect and report academic misconduct. High ratios of students to instructors necessitate more and better resources to ensure academic integrity.

This report identifies three avenues to improve assessment in the post-COVID-19 academic integrity environment. First, the WMU Office of SRR approach to academic integrity should be reviewed. Second, HCoB should consider implementation of an honor code in accordance with AACSB recommendations. Third, instructors would benefit from additional guidance or resources to detect and collect evidence of academic integrity violations. Section 5.4.1 of this report outlines

[19] Reporting likelihood is based on the value of 1.7939/.4023 = 4.4590 which is similar to the 4.6049 responsibility figure.

potential reasons for HCoB underreporting. Addressing these avenues will promote a culture of academic integrity at WMU.

5.4.1. Process History

The WMU Office of Student Conduct (OSC) had an unfortunate history implementing the WMU academic integrity process. Poor documentation, operational errors, nonsensical AIHP outcomes, and even apparent reprisals against instructors that report academic integrity violations have occurred. For at least some instructors at HCoB, these issues have produced a chilling effect regarding reporting of academic misconduct. Furthermore, the WMU OSC did not regularly publish academic misconduct metrics leading to poor process transparency. Table 12 outlines some of the problematic history of the OSC prior to reorganization as the WMU Office of Student Rights and Responsibilities. Academic integrity process issues were apparently common, the evidence standard for a finding of responsibility appeared to be variable, and the OSC even initiated an unfounded investigation against an instructor because the instructor reported academic misconduct. These issues created substantial obstacles for instructors to comply with WMU policy regarding academic integrity under the Office of Student Conduct and most likely produced a chilling effect on academic misconduct reporting within HCoB.

Table 12: Selected Academic Integrity Process Issues

Date	Issue	Result
20MAR17	A single Academic Integrity Hearing Panel (AIHP) included seven distinct process issues.	The WMU General Counsel acknowledged the need for AIHP-related process improvements.
18AUG18	An instructor charges four students with cheating and one student with cheating, computer misuse, and	The OSC accepts the seven charges and the instructor's assertion of a potentially larger issue involving a pattern of academic misconduct within HCoB.

	complicity on final exam in a Summer II 2018 course.	
27AUG18	One of five students charged with cheating accepted responsibility for the academic integrity violation.	OSC sent a copy of the acceptance of responsibility to the instructor. Then the instructor emailed all students in the classroom with a request to come forward regarding any knowledge of misconduct.
28AUG18	The student retracted his statement accepting responsibility given to the OSC on the prior day.	The OSC had no public document stating that a student may retract acceptance of responsibility. However, the OSC accepted the retraction and refused the acceptance of responsibility to be allowed as evidence in the AIHP.
31AUG18	The instructor called OSC to understand why the retraction of acceptance was allowed in violation of the published process.	The OSC explained that a student may reverse their position at any point in the process despite no indication of a reversal option in the published WMU academic integrity process. The instructor then outlined additional evidence suggesting misconduct and the OSC encouraged submission of additional formal charges.
1SEP18	Based on OSC guidance, the instructor submits plagiarism charges involving three students previously charged with cheating.	The OSC accepts the three plagiarism charges.
4SEP18	Based on OSC guidance, the instructor charges five students with cheating and one student with cheating, computer misuse, and complicity on the second midterm exam in the Summer II 2018 course.	The OSC accepted the eight additional charges for the midterm exam. The 18 total academic misconduct charges are allocated to students as follows: A has 6, B has 3, C has 2, D has 3, E has 2, and F has 2 charges.

7SEP18	The OSC accused the reporting instructor of discrimination on the basis of national origin.	The Office of Institutional Equity (OIE) received charges against the instructor. Neither OSC nor OIE informed the instructor that he was under suspicion. The AIHP process went forward despite a pending OIE investigation.
24SEP18	The OSC attempted to hold an AIHP without giving prior notice to the instructor or witnesses.	At least one member of the AIHP expressed an opinion regarding the OIE investigation. OSC created an AIHP process with confusion, delays, inefficiency, and increased potential for bias.
28SEP18	The Academic Integrity Hearing Panel (AIHP) found students were responsible only for the three plagiarism charges. All 15 charges related to exams were dismissed.	Evidence for cheating included identical answers on two different exam versions that should happen 1 out of 59,604,644,775,390,600 times (i.e. 5^{24}). Evidence for computer misuse and complicity included video, instructor statement, and a witness statement from a graduate student. The AIHP process lacks integrity when it does not hold students the preponderance of evidence standard.
11OCT18	Instructor was first notified of the OIE investigation 34 days after OSC made the accusation.	A brief phone conversation between the instructor, department chair, and OIE showed the accusation was unwarranted. Unfounded accusations by OSC against a reporting instructor resulted in a chilling effect regarding future academic integrity reporting at HCoB.
26OCT18	Instructor presents “Equity in grade assignments” to the HCoB Undergraduate Programs Council (UPC) because final grades had been assigned on a course curve prior to the AIHP results.	The UPC recommends against readjusting the course grading curve based on AIHP results. This approach is acknowledged as the least bad option. The overall effect is that two different grading standards are applied in this course during Summer 2 2018.

Why might HCoB instructors underreport academic misconduct? Is there something different about either business instructors or their courses that might lead to anemic academic integrity reporting? Specifically, what are the incentives around monitoring for misconduct and reporting misconduct? Does the high ratio of students to instructors at HCoB make detection of academic misconduct more challenging? Are there problems with the WMU academic integrity process that disproportionately impact HCoB? To answer the first question of this paragraph, one would benefit from answers to all the other questions posed here. While a single root cause is unlikely, the academic integrity process history summarized in Table 12 suggests that serious past problems have produced a chilling effect within HCoB.

To best address academic misconduct underreporting at HCoB, considerations may include the following. First, incentives matter. If instructors view reporting as only a costly process with no potential benefits, they are less likely to report. Second, if the process is not transparent and may include reprisals, instructors may actively avoid the academic misconduct process. Third, with a change from the Office of Student Conduct to the Office of Student Rights and Responsibilities combined with new leadership under Associate Dean Sarah Meiser, there is an opportunity to reset expectations. Recognizing and addressing issues with the WMU academic misconduct history may be necessary to improve the academic misconduct underreporting at HCoB.

5.4.2. Honor Code

AACSB outlines the wisdom of honor codes at business colleges on page 12 of the ethics education task force report.[20] "In many schools, the commitment to ethics education cuts across the business school curriculum at all levels, starting at the undergraduate level. Honor codes for all students, a practice endorsed in the AACSB Standards interpretations, is frequently an element in the business school curriculum. These codes emphasize the importance of proper behavior for administrators, faculty, and students in their professional

[20] Ethics Education in Business Schools, AACSB International, https://www.aacsb.edu/-/media/publications/research-reports/ethics-education.pdf?la=en Referenced 5JUN23

and personal actions. Many schools also adopt disciplinary systems, oaths, service projects, and other concepts to stress the importance of ethical behavior." Other business colleges in Michigan have already implemented honor codes at the college level.

The two most prominent business colleges in Michigan have honor codes as does Grand Valley State University (GVSU). The HCoB Faculty Governance Committee (FGC) should evaluate two elements related to AACSB ethics standards. First, HCoB should consider advancing beyond the Code of Conduct established by the Student Leadership Advisory Board which only addresses individual integrity within the context of professionalism. HCoB should consider adoption of an AACSB endorsed honor code at the college level. Second, HCoB should consider creating a hearing process within the college following the model provided the University of Michigan. With approval of the relevant university-level entities, HCoB could take control of the academic integrity process to both correct failures of the WMU academic integrity process such as those documented in this report and become more adaptive to challenges outlined in section 5.4.3 of this report. Table 13 provides honor codes at selected business colleges in Michigan.

Table 13: Business College Honor Codes

University	Honor Code	Review Body	Hearing Level
Michigan	Ross School of Business Academic Honor Code[21]	Community Values Committee	College
Michigan State	Eli Broad College of Business Undergraduate Honor Code[22]	University Academic Integrity Hearing Board	University
Western Michigan	None	Academic Integrity Hearing Panel	University
Grand Valley State	Seidman College of Business Student Code of Honor[23]	Hearing Board/Hearing Office	University

[21] Academic Honor Code, University of Michigan, https://rossweb.bus.umich.edu/academics/wp-content/uploads/sites/2/2012/06/RossAcademicHonorCode2017.pdf Referenced 5JUN23
[22] Honor Code, Michigan State University, https://broad.msu.edu/undergraduate/policies/honor-code/ Referenced 5JUN23
[23] See Williams, H. J., (2012) Student Codes of Honor: Part of the Solution?. *Seidman Business Review, 18*(1), Article 9. https://scholarworks.gvsu.edu/sbr/vol18/iss1/9

Intentional communication around academic integrity is essential. To facilitate success, both instructors and students must have a clear understanding of the process. A well written and widely shared honor code can do much to fill that gap. This issue could probably be best addressed by the HCoB Faculty Governance Committee with input from the HCoB Technology and Learning Committee.[24] The joint committee submit a formal letter to the Faculty Senate and the Office of Student Conduct. This letter could state the academic integrity problem and suggest solutions moving forward. Once changes are approved, HCoB business communications expertise should be leveraged to both develop and clearly communicate expectations around an honor code.

The honor code could also help address AACSB societal impacts tied to United Nations Sustainable Development Goals (SDGs). Specifically, a well-crafted honor code could contribute to Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.[25] Academic integrity research demonstrates differences in the propensity to cheat, based on factors such as gender and cultural background. This finding is relevant to Target 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development. The indicator 4.7.1 for this target is particularly relevant: Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education and (d) student assessment. Ultimately, an HCoB adoption of an honor code could improve assessment practices by reducing academic misconduct, help HCoB maintain AACSB accreditation, and support a UN sustainable development goal.

5.4.3. Technology Arms Race

[24] Thanks to Associate Dean Yaman for suggesting the process outlined in this report.
[25] Goal 4, United Nations, https://sdgs.un.org/goals/goal4 Referenced 21JUN23

Students work towards better performance on high stakes assessments. The conventional approach to better performance, which WMU wants to encourage, is intense study. However, academic misconduct is a tempting shortcut to gaining an advantage. This dynamic leads to something of an academic integrity arms race. With the proliferation of digital resources following the onset of COVID-19, students appear to be winning this race. This is reminiscent of the Lance Armstrong scenario, where selection is for the best cheater rather than the best competitor. Such an environment creates toxic incentives where otherwise honest competitors must either cheat or fail. Propensity towards academic misconduct is higher when cheating becomes commonplace.[26] Meaningful assessment in sport, academics, or any other discipline becomes impossible when systematic misconduct occurs. HCoB faculty need resources and support to facilitate detection of academic misconduct. Two potential threats to academic integrity deserve immediate attention.

The first threat is Chegg which exploded in popularity with the shift to remote learning produced by COVID-19 lockdown measures. While other platforms that tempt misconduct do exist, Chegg is a publicly traded company with a market capitalization exceeding a billion dollars as of this writing. As such, it has immense resources and changed its "honor code policy" in August 2022 to limit sharing of information with universities that is related to academic misconduct.[27] As individuals, instructors cannot effectively fight against a large corporation that facilitates academic misconduct. Appendix B shows how quickly custom-built exam questions in HCoB courses can be posted to Chegg. An institutional resource is needed to help instructors mitigate the potential for misconduct on digital platforms such as Chegg.

The second threat is the explosion of publicly available artificial intelligence (AI) platforms beginning in 2022. Students have direct access to platforms such as ChatGPT that can answer complex questions and create original content. Personal access to AI is a disruptive innovation that is here to stay. Instructors need guidance about how to structure

[26] See Rettinger, D. A., & Kramer, Y. (2009). Situational and Personal Causes of Student Cheating. *Research in Higher Education, 50*(3), 293–313. http://www.jstor.org/stable/29782921 for evidence that both direct knowledge of cheating and neutralizing attitudes towards cheating increase the likelihood of cheating behaviors.
[27] Chegg no longer sharing student information with universities to protect student privacy, The State Press, https://www.statepress.com/article/2022/10/students-use-chegg Referenced 6JUN2023

assessments in the presence of AI as confusion abounds.[28] Institutional guidelines, recommendations, and resources are needed to support instructors charged with maintaining academic integrity in an AI environment. While WMUx has structured some events around helping instructors manage AI use in courses, an institutional approach to facilitating secure examinations is needed to blunt the impact of academic misconduct with such powerful tools.[29]

One might view technology fueling the age-old arms race between instructors delivering exams and students seeking answers by any means available. With students currently benefiting from the resources of for-profit corporations such as Chegg and AI funded by even larger corporations, they appear to be outpacing instructors. A task force might be charged with addressing steps to mitigate the impact of new tools that threaten academic integrity. At a minimum, this body should include representatives with knowledge of student conduct, faculty with experience detecting academic misconduct, a specialist in information technology, and an administrator. These skills can all be found within HCoB but such a task force would likewise be appropriate at the university level.

6. Conclusion

The background section demonstrates challenges of assessment within a quantitative field such as finance during the COVID-19 period. Unfortunately, Inspera Assessment did not meet the expectations of the WMU pilot test. They acknowledged this failure and refunded WMU the full $4940 contract cost. None of the three objectives were met and we only achieved partial success for six of the 10 individual outcomes. Table 14 provides a summary of the objectives and outcomes detailed in section 3 of this report.

Table 14: Objectives and Outcomes

Outcome	Partial Success	Result

[28] ChatGPT is making universities rethink plagiarism, Wired, https://www.wired.com/story/chatgpt-college-university-plagiarism/ Referenced 6JUN2023
[29] AI@WMU, Western Michigan University, https://wmich.edu/x/instructors/resources/ai Referenced 28JUL23

Technical Objective		
Single Sign On (SSO)	Yes	Established in January, failed in February
VPAT	No	Not completed before pilot termination
Laptop Specification	Yes	Confirmed by WMU, ignored by Inspera
Full Approval	No	Not completed before pilot termination
Technical Summary	2 of 4	Some steps towards but failed technical
Implementation Objective		
Prior Access	Yes	Established in January, failed in February
MS Excel Access	Yes	Not completed before pilot termination
Academic Integrity	Yes	Confirmed by WMU, ignored by Inspera
Implementation Summary	3 of 3	Progress towards but failed implementation
Grading Objective		
Timely Grading	Yes	Paper exams delayed grading
Consistent Grading	No	Inconsistent exam format and monitoring
Assessment Alignment	No	Could not evaluate
Grading Summary	1 of 3	Failed the grading objective

This report addresses five HCoB assessment goals. 1) Experiences during this pilot facilitate preliminary assessment of the planned HCoB BYOD policy. 2) Formative assessment of Inspera Assessment to facilitate new finance course offerings suggests a poor fit at this time. 3) Summative assessment of Inspera Assessment in the HCoB Hyflex MBA program was not achieved due to multiple issues and pilot termination. 4) Formative assessment of MS Excel integration into WMU finance curriculum was not achieved due to multiple issues and pilot termination. 5) Inspera Assessment does not offer improvements to HCoB assurance of learning assessment needed for AACSB accreditation. Unfortunately, Inspera Assessment failed to deliver on promises during the course of this pilot.

This report offers six recommendations with three primarily focused at the university level and three primarily impacting the college level. First, WMU would benefit from a review of the WMU digital assessment platforms including Respondus and competitors. Second, WMU should consider measures related to internal technology issues that contributed to the Inspera pilot failure.

Third, HCoB should assess both the technology and learning implications of the new HCoB Laptop Policy. Fourth, HCoB would benefit from improvements in the academic integrity process at WMU under the new Office of SRR. Fifth, HCoB should evaluate the addition of an AACSB-recommended honor code. Sixth, WMU faculty need structure and guidance to manage academic integrity threats such as Chegg and artificial intelligence. With better assessment tools, a better academic integrity process, and a college-level honor code, there are viable avenues to improve the academic integrity culture.[30] Table 15 outlines these recommendations with relevant units identified as having some responsibility for the topics identified in this report.

Table 15: Overall Recommendations

#	Review Area	Section	Relevant Units
1	Digital Assessment	5.1	WMU Academic and Information Technology Council WMU OIT Instructional Technology Committee
2	Technology Issues	5.2	WMU Academic and Information Technology Council WMU OIT Campus Information Security Committee
3	HCoB Laptop Policy	5.3	HCoB Technology and Learning Committee
4	Integrity Process	5.4.1	WMU Faculty Senate HCoB Policy Council HCoB Faculty Governance Committee
5	HCoB Honor Code	5.4.2	HCoB Faculty Governance Committee HCoB Technology and Learning Committee
6	Tech Arms Race	5.4.3	WMU Academic and Information Technology Council WMU Ad Hoc Artificial Intelligence Committee

Despite the overall failure to secure Inspera Assessment as a new assessment platform, this pilot did assist with identifying potential avenues for assessment improvement at WMU. The recommendations outlined in this report can help improve assessment-related processes at WMU.

[30] Thanks to SRR Director Sarah Meiser for articulating a goal to promote a culture of integrity at WMU.

Appendix A: Timeline

Identification Phase

Date	Event
11MAR20	WMU notifies faculty and students of a shift to online course delivery based on COVID-19 health guidance.
24JUN20	WMU finance faculty begin investigating Proctorio as a secure examination system.
14JUL20	The Department of Finance and Commercial Law (FCL) decides to add Proctorio as a bundled option for all McGraw Hill texts in the department.
12AUG20	PI notifies McGraw Hill that Proctorio system requirements are not available online.
21AUG20	PI informs FCL Chair that Proctorio is not linking with the FIN3200 text.
24AUG20	The PI and other FCL faculty finalize the Proctorio pilot structure in FIN3200.
24SEP20	PI conducts a practice test in FIN 3200 using Proctorio. Of 75 students, 71 complete in Proctorio but 11 report some type of problem or uncertainty.
25SEP20	PI reports failures to Proctorio and McGraw Hill. Representatives attempt to address the issues.
1OCT20	HCoB IT and the PI present an update on Proctorio to the HCoB Policy Council. The council decides to suspend using Proctorio pending completion of the WMU technology compliance review.
14OCT20	WMU approves Proctorio for use.
20OCT20	PI follows instructions from Proctorio to adjust settings. The instructions do not result in a flag when a test taker covers their camera.
2NOV20	Proctorio exam monitoring fails to function as advertised and the issue cannot be resolved.
3MAR21	WMU Registrar informs faculty that students must consent before using the Respondus Monitor. Any system where students must show surroundings such as “environment checks” also requires consent.
JUN21	PI investigates the Respondus lockdown browser for finance exams in Fall 2021. The PI determines that this service is not ideal for finance exams.
DEC21	PI replaces the BA2 Plus Professional calculator with MS Excel in Spring 2022 FIN2420 courses.
FEB22	Students report issues accessing MS Excel during the midterm exam.
23MAR22	WMUx attempts to “fix” the Respondus issue with accessing MS Excel.
6JUN22	PI meets with a representative from Top Hat to evaluate secure exam options that allow for MS Excel. The PI determines that the services is not suitable.
28JUN22	WMUx stops advocating for MS Excel within the Respondus Lockdown Browser, acknowledging the limits of this system.
14JUL22	Prof. Leiv Opstad of Norges teknisk-naturvitenskapelige universitet (NTNU) suggests Inspera AS for MS Excel enabled exams.
19JUL22	PI holds a virtual meeting with Inspera AS representative to discuss goals of using MS Excel in a secure exam environment.

28JUL22	PI accesses an Inspera demonstration version and checks the MS Excel access inside the lockdown browser. PI determines it to be the best fit to date.

Review Phase

Date	Event
1AUG22	PI submits a WMU technical review of Inspera Assessment with support from HCoB IT. The PI also initiates the WMU legal review.
18AUG22	HCoB IT and the PI meet with the HCoB Associate Dean to explain the need and estimate the scope of work required.
26AUG22	Inspera sends the PI drafts of the Data Processing Agreement (DPA) and the Terms and Conditions (T&C).
26SEP22	WMU legal review provides detailed comments to address and four additional requests for reviewer comments within WMU.
12OCT22	WMU IT grants conditional approval of Inspera Assessment based upon European Union documentation with four items noted.
16NOV22	Inspera provides PI with five demonstration tests using the Safe Exam Browser (SEB) to assist with testing.
21NOV22	The PI requests help from HCoB IT after several failed attempts to install SEB.
22NOV22	After several attempts, HCoB IT successfully installs SEB.
28NOV22	Inspera provides a demonstration to selected members of WMUx and HCoB instructors.
30NOV22	Inspera introduces an onboarding consultant to handle the WMU account.
2DEC22	WMU legal grants conditional approval of the Inspera contract documents with one item noted. The HCoB Dean satisfies this conditional item.

Planning Phase

Date	Event
5DEC22	Inspera holds a kick off meeting held to launch a WMU pilot program.
6DEC22	Inspera requests information about account customizations, initial users, onboarding training activities, training sessions, SSO, and fortnightly project status meetings.
7DEC22	PI informs Inspera of a login failure due to timing out while buffering. PI sends Inspera details about all requests except the account customizations and the SSO which are referred to HCoB IT.
8DEC22	HCoB IT sends the metadata file to WMU OIT and requests the eduGain EntityID to prepare for the SSO setup.
13DEC22	Inspera informs the PI that the SEB capabilities involving MS Excel will not work as previously explained on all Apple devices. Inspera presents PI with an

	alternate solution using IEP. PI provides Inspera with UTF8 format exam files to upload into Inspera Assessment.
15DEC22	HCoB IT provides Inspera with account customization information.
16DEC22	PI meets with Inspera to determine the pilot specifications. Inspera AS details reasons why the Inspera Exam Browser (IEP) in open access mode is superior to the SEB due to fewer issues with apple devices. Due to limitations with SEB involving Apple devices the PI decides to use IEP in open access mode.
20DEC22	HCoB Associate Dean for Graduate Studies awards the grant "Pilot Test of Inspera Assessment" to fund the $4940 pilot test contract.
21DEC22	PI and HCoB IT meets with Inspera to discuss computer requirements and review testing set up. Inspera provides WMU with the link to install IEP on WMU machines and student devices. More than one month later, the PI discovers that Inspera provided IEP 1.15 rather than IEP 1.14 which met WMU standards.
22DEC22	PI is not able to edit templates within Inspera. Inspera makes edits and provides new guidance.
28DEC22	Inspera confirms that "... ISP recordings (screen recordings and security flags) will now be deleted 1 year after submission (and not after grading is completed)."
30DEC22	PI provides the list of WMU Inspera service desk accounts.
1JAN23	The one-year pilot contract period begins.
4JAN23	HCoB IT requests that WMU OIT provide support for the SSO.
6JAN23	PI publishes syllabi requiring IEP for exams in two sections of FIN3200 and in MBA6004.
10JAN23	WMU OIT, HCoB IT, and PI meet with Inspera to configure the SSO. WMU OIT shares SAML code with Inspera.
17JAN23	Inspera confirms receipt of the $4940 contract payment from WMU.
18JAN23	As of the WMU drop deadline there are 12 MBA6004 students and 84 FIN3200 students required to use IEP.
19JAN23	With guidance from Inspera, the PI finally gets WMU students access to their Inspera platforms. PI sends a MS Excel .csv file for Inspera to upload exams.

Assessment Phase

Date	**Event**
20JAN23	WMU is hit with a major IT service disruption. PI's laptop was taken by HCoB IT and all access to files on WMU drives is lost. PI starts using a home computer and can still access Inspera Assessment.
21JAN23	The PI opens the Inspera Assessment practice exam to FIN3200 students with a due date of 27JAN23.
22JAN23	The PI opens the Inspera Assessment practice exam to MBA6004 students with a due date of 27JAN23. The PI works with HCoB IT to plan IEP installation in HCoB computer labs to support upcoming exams.

23JAN23	Inspera verifies the 10-step installation & IEP system check instructions that PI provided to the 96 WMU students in sections of FIN3200 and MBA6004.
24JAN23	HCoB IT informs PI that the service disruption precludes the HCoB computer labs from providing IEP-enabled computers to support. PI forwards the first IEP install failure on a Macintosh device to Inspera and requests guidance. Inspera asserts that the student did not follow the IEP installation instructions.
25JAN23	Inspera responds to a prior request by the PI to disable the camera and microphone check as unneeded obstacles to this pilot test. Inspera conveys that disabling the camera or microphone checks is not possible.
26JAN23	The PI meets with HCOB Associate Dean to detail the impact resulting from the service disruption. The PI outlines mitigation measures to continue with the Inspera Assessment pilot test despite the service disruption. PI forwards the second IEP install failure on a Macintosh device to Inspera and is instructed to file an Inspera Help Desk ticket.
27JAN23	Due date for the practice exam in both FIN3200 and MBA6004. PI submits the IEP install failure ticket #16656 to the Inspera Help Desk. The Inspera response includes “I am changing the priority of the ticket, as it does not seem to be an incident on our side.” The PI extended this due date by 48 hours due to many students reporting trouble with IEP installation on their devices.
28JAN23	PI submits individual IEP install failure help desk tickets #16659 and 16660. PI follows with ticket 16661 summarizing IEP installation or system check problems with 12 WMU students.
29JAN23	Only 67 of 94 students (71%) complete the IEP system check by the extended practice exam due date.
30JAN23	PI meets with Inspera to review IEP installation problems. PI asserts there is a “systematic problem with the IEP install process in a BYOD setting”. Inspera replies “we do not have any indications that there are any systemic issues”.
31JAN23	PI requests that Inspera confirm the system requirements of the WMU version of IEP and sends Inspera a summary of WMU student operating systems.
1FEB23	HCoB IT informs PI that the taken laptop is compromised. It must be wiped to restore original security settings and the PI will lose all data on the machine. The PI reissues a second IEP practice exam to 32 students that did not complete the first practice exam.
2FEB23	Inspera informs PI that WMU’s IEP “minimum requirement for macOS is 11 or higher”. PI explains that this requirement is inconsistent with the WMU laptop information shared at the 21DEC22 meeting. PI requests dedicated support from Inspera to resolve all the student IEP issues. Ross schedules an emergency 3FEB23 virtual meeting to work out the issues ahead of the 7FEB23 examination.
3FEB23	Nobody from Inspera joins the 10 AM meeting. Inspera tells PI to provide the IEP version 1.14 to students with macOS installation failures.
4FEB23	PI informs Inspera that successful IEP installation was only achieved on 57 of 81 (70%) FIN3200 student devices. Since no HCoB computer labs have IEP, paper copies of the exam must be printed for nearly a third of the students.
5FEB23	HCoB IT checks with WMU Helpdesk staff regarding support materials available for Inspera.

6FEB23	HCoB IT and the PI meet with Inspera to discuss IEP installation problems.
7FEB23	The first exam begins in FIN3200. Only 51 of 81 (63%) of FIN3200 students submit exams using IEP. Nine students (11%) encountered a total of seven different error types the morning of the exam. Inspera sends PI a troubleshooting guide. PI details many errors with this guide and requests an accurate guide.
8FEB23	Inspera categorizes IEP problems experienced to date.
9FEB23	Inspera provides a revised IEP troubleshooting guide.
15FEB23	HCoB IT returns a wiped laptop to the PI. Inspera commits to providing live support for the upcoming MBA 6004 exam.
16FEB23	WMU IT Help Desk plans to create an Inspera knowledge article in the new goWMU and also distribute in the internal WIKI to the WMU IT Help Desk team. PI notifies Inspera that performance to date is inconsistent with contract section 4.1, *"Resilient, scalable and universally accessible test delivery and test taking, supporting whitelisting of resources and lock-down browser on PC, Mac, iPad and Chromebook – designed for Bring-Your-Own-Device exams."*
17FEB23	HCoB IT installs IEP on a Mac device in the main HCoB computer lab.
20FEB23	Students cannot access IEP for the MBA6004 exam. The dedicated Inspera support line is not able to resolve the single sign on (SSO) issue. The PI reopens an old exam in D2L at the last minute and students take a midterm without any monitoring. Zero of ten (0%) complete the exam using IEP.
22FEB23	WMU OIT verifies that the MBA6004 exam day SSO failure was due to a problem with a third party provided contracted by Inspera.
23FEB23	PI and HCoB IT meet with Inspera. Inspera presents WMU with two options. One is for a full refund and the other is a plan to address problems encountered.
24FEB23	PI and HCoB IT meet with the HCoB Associate Dean. This group makes the decision to put the decision before WMU students in the pilot. They are given the final input regarding termination or continuing forward with the pilot.
27FEB23	PI collects input from MBA6004 students in class. Students overwhelmingly wish to stick with the D2L exam platform for the final exam.
1MAR23	PI collects input from FIN3200 students in class. Students overwhelmingly wish to use the D2L exam platform going forward. PI informs Inspera that the pilot is terminated.
2MAR23	Inspera acknowledges termination and requests refund information. PI requests a refund via check and provides the WMU banking details.

Report Phase

Date	**Event**
6MAR23	Inspera informs PI of a US-based chief product officer (CPO) hire to begin the week of March 20th and requests a debrief from the PI.
7MAR23	Inspera requests feedback from the PI regarding improvements to the Inspera user interface (UI) that could facilitate the user experience (UX).

8MAR23	Inspera notifies PI that they cannot issue an international check. Inspera requests wire transfer instructions.
9MAR23	HCoB administration provides Inspera with wire transfer instructions.
10MAR23	PI informs Inspera of problems accessing data needed to write this report.
13MAR23	PI requests missing data from Inspera in order to produce a completed report.
17MAR23	Inspera provides PI with copies of WMU exam templates. Inspera AS refunds the $4940 cost of the pilot contract to WMU via wire transfer.
20MAR23	WMU OIT updates laptop minimum recommendations replacing macOS Catalina (10.15) with macOS Monterey (12).
27MAR23	Inspera confirms that the video recordings of all exams taken by WMU students were mistakenly deleted due to their failure to adjust settings properly.
28MAR23	The Inspera accounting system (Xledger) mistakenly sends a bill to the PI.
31MAR23	The PI notifies Inspera of the mistaken bill. Inspera acknowledges the mistake.
20APR23	PI authorizes Inspera to delete tenant and all personal data in line with the data processing agreement (DPA).
10MAY23	Inspera confirms that WMU data is fully deleted.
6JUN23	PI sends a rough draft of report #08-2023 out for comments to key people.
9JUN23	Edit based on feedback from the Director of HCoB IT. Thank you!
12JUN23	Edit based on feedback from HCoB Faculty Specialist with extensive knowledge of WMU's assessment and academic integrity. Thank you!
13JUN23	Requests academic integrity data from the WMU Office of Student Conduct.
14JUN23	Edit based on feedback from the WMU Director Strategic Project & Service Management. Thank you!
28JUL23	Edit based on feedback from HCoB Associate Dean of Undergraduate Programs.
7AUG23	Edit based on feedback from WMU Associate Dean of Students and Director, Student Rights & Responsibilities.
19SEP23	Edit based on feedback from WMU Program Manager Assessment.
5OCT23	HCoB Policy Council discusses academic integrity process with guest speaker Associate Dean of Students and Director, Student Rights & Responsibilities.
1NOV23	The HCoB Technology and Learning Committee discusses sections 5.3 and 5.4 of this report during a meeting.

Appendix B: Websites with Exam Questions

There are a number of websites that provide students with exam question solutions. WMU students appear to commonly use Chegg.com for this purpose. The Chegg website has many exam questions that were custom designed and used exclusively for FIN3200 sections taught by the PI. These unique exam questions and results are discoverable via a simple Google Search. This appendix provides examples for two of these questions. Questions A and B are both used as critical thinking questions for the HCoB Assurance of Learning Committee (ALC) analysis. Leaks of these specific questions are a serious issue since FIN3200 is the course where the ALC collects data for AACSB-required critical thinking dimension. With the answers to these questions posted online, accurate assessment needed for HCoB accreditation is impaired.

Some other questions posted online allow for the instructor to identify a unique student that had the question on their exam. This approach is time consuming but possible when the question appeared in only one course, semester, and exam. Furthermore, the question posted to Chegg must include both the question number and the order of multiple-choice answers. Since exams had a randomized order of questions and a randomized order of the answers, it is possible to make a unique match. Given these criteria, only the "party" question C and the "BIG" question D appear to match. Unique individuals are identified as summarized in Table B-1.

Table B-1: Unique Chegg Matches

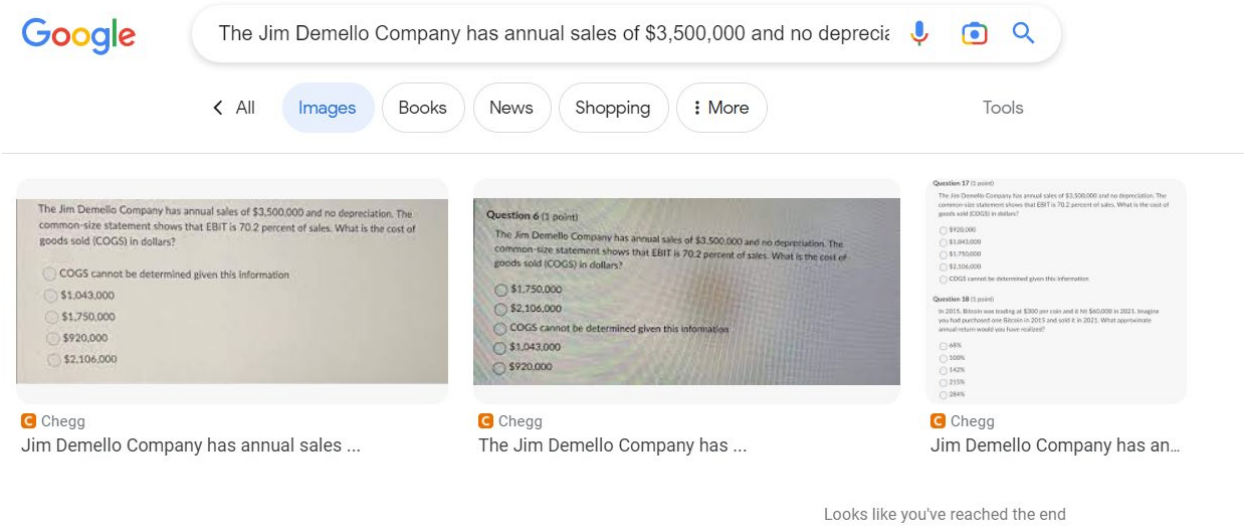
Violation Suspect	Semester	Exam	Test Takers	Problem	Question Number	Same Number
A	Fall 2022	Final	92	"party"	26	4
B	Fall 2022	Final	92	"party"	10	5
C	Fall 2022	Final	92	"BIG"	16	2

Question A:

The "Jim DeMello" exam question appeared in both the Fall 2022 and Spring 2023 semesters with no changes. The question was, "The Jim Demello Company has annual sales of $3,500,000 and no depreciation. The common-size statement shows that EBIT is 70.2 percent of sales. What

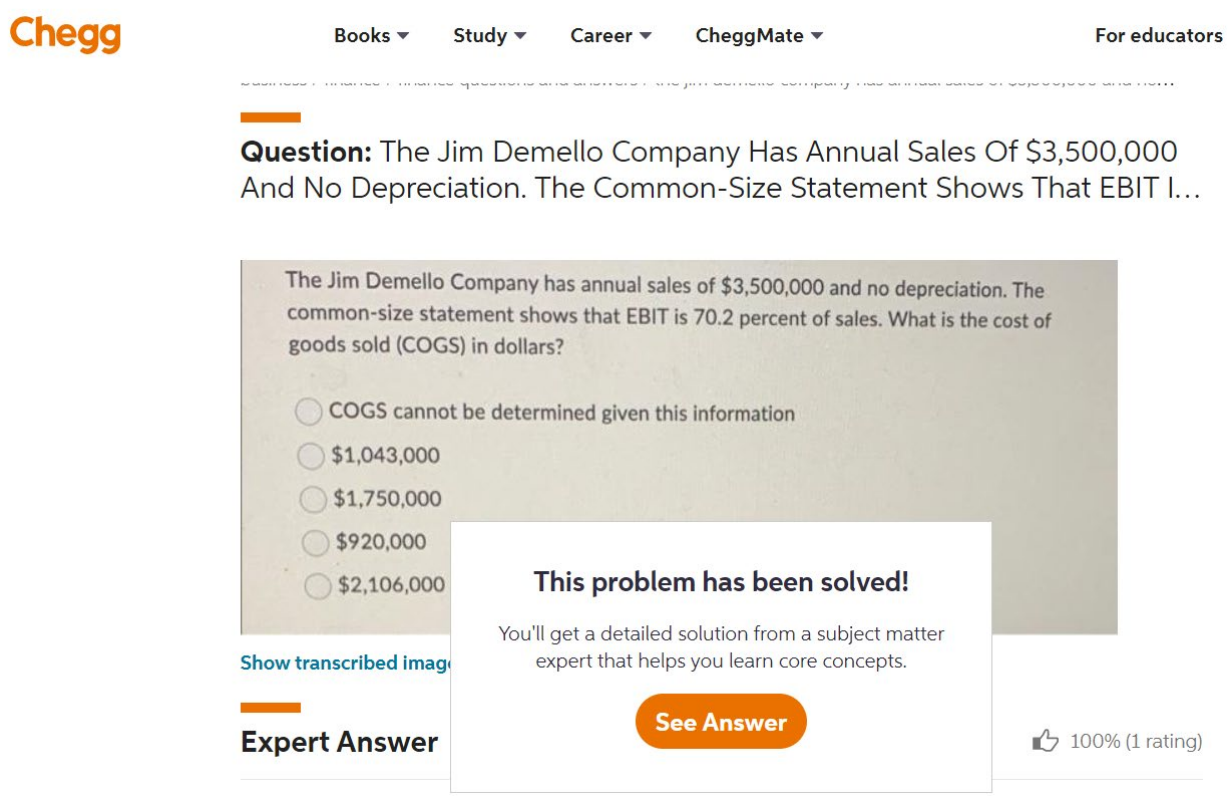
is the cost of goods sold (COGS) in dollars?" Since the Chegg.com website does not provide image dates one cannot say which semester the exam problems were captured from. A google search produces three Chegg answers for Question A in Figure B-A1.

Figure B-A1: Question A Google Images



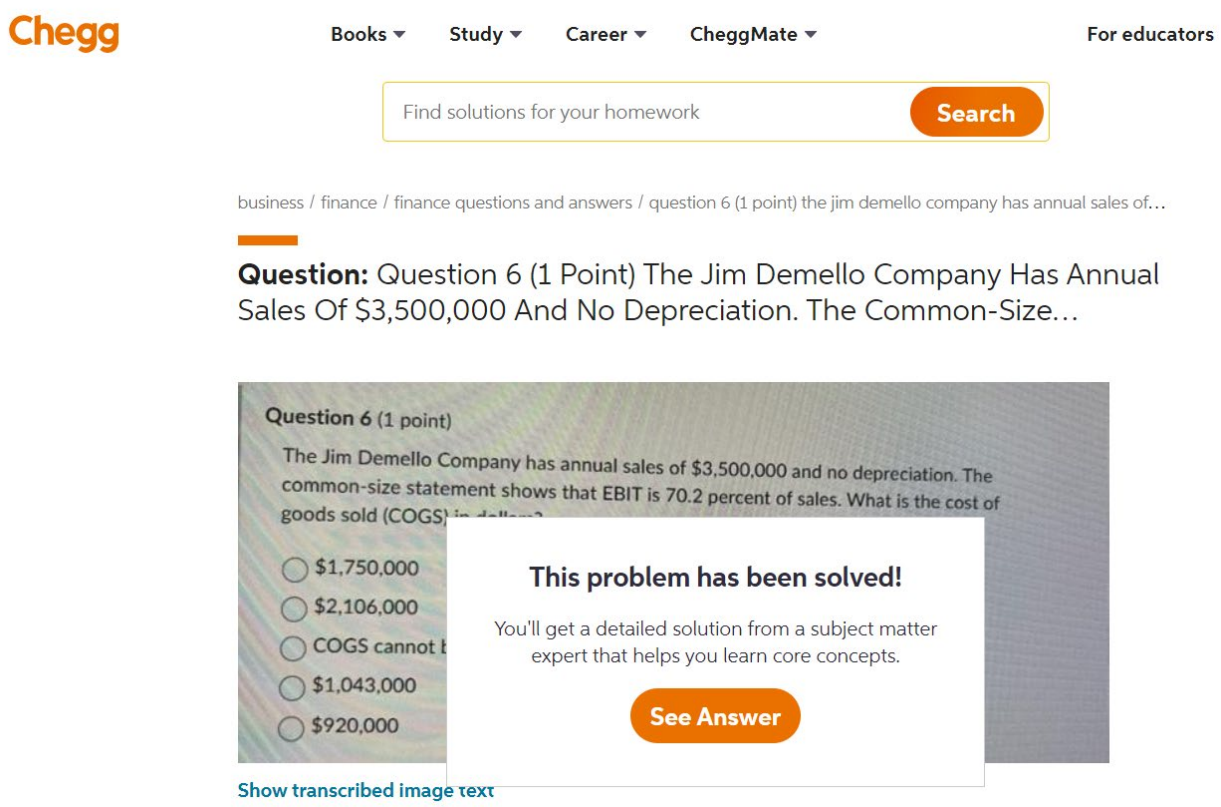
The first image appears to be a photo of a paper copy of the exam. This would have only been accessible during an exam. The most likely explanation for the appearance on Chegg is that a student took a picture during the exam. See Figure B-A2 for a better image of the paper exam copy.

Figure B-A2: Question A Paper Image



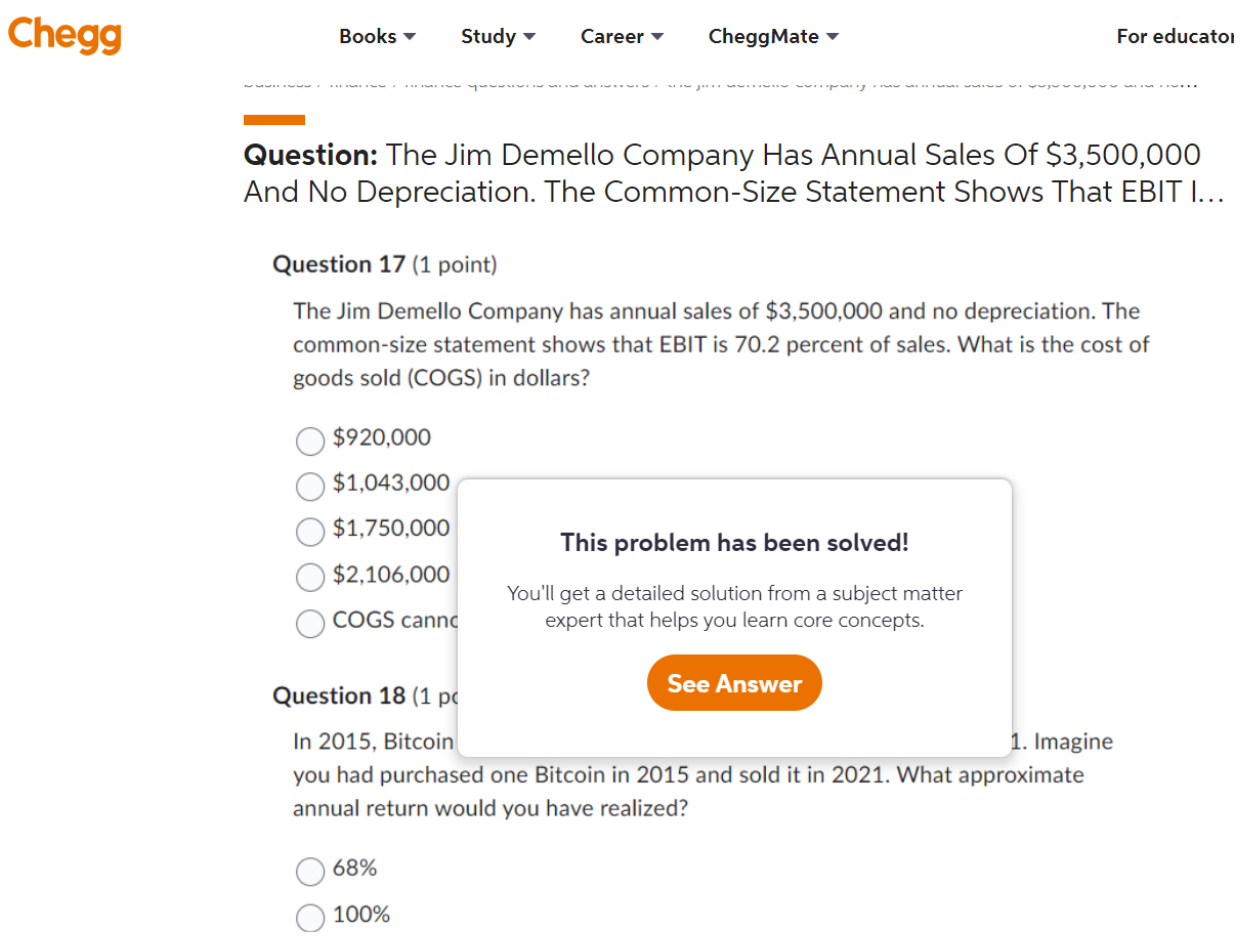
The second image appears to be a photo of a computer screen. This screen would only have been accessible during an exam. The most likely scenario is that a student used a camera to take a picture of their screen during their exam. See Figure B-A3 for a better image of the exam screen capture.

Figure B-A3: Question A Screen Image



The third image is an entry including the text but without associated photo evidence. It is more difficult to say how this problem was captured and uploaded. See Figure B-A4 for a better image of the third entry for Question A.

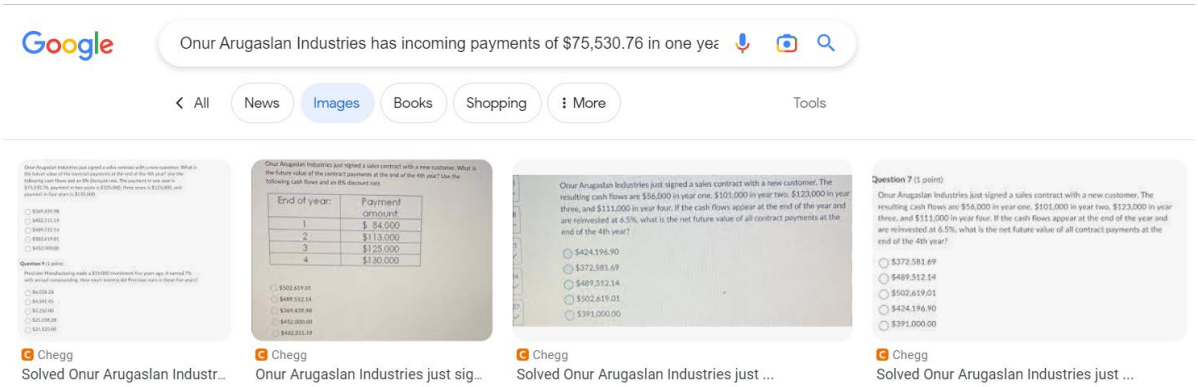
Figure B-A4: Question A Third Image



Question B:

The PI used different versions of the "Onur Arugaslan" exam question before the Fall 2022 semester, in the Fall 2022 semester, and in Spring 2023. This exam question was some variation of, "Onur Arugaslan Industries has incoming payments of $75,530.76 in one year, a payment of $105,000 in two years, $125,000 in three years, and a payment of $150,000 in four years. What is the future value of the contract payments at the end of the 4th year? Use the following cash flows and an 8% discount rate." There are four Chegg answers associated with this question. The first of the four images include the numbers that are unique to the first midterm in Spring 2023. The second image includes a version used on exams prior to the Fall 2022 semester. Images three and four includes the version used on the final exams in both the Fall 2022 and Spring 2023 semesters. A google search produces the following four Chegg answers associated with this question in Figure B-B1.

Figure B-B1: Question A Google Images



The first image includes the version from the first midterm in Spring 2023. This means it was accessed on February 7th, 2023 which was the only date this version of the question was open to students. The image is consistent with the format of a D2L exam screen shot. Unique identification of the following was not possible since Inspera erred by deleting the data for the first midterm. See Figure B-B2 for a better image of Question B.

Figure B-B2: Question B in Spring 2023

Onur Arugaslan Industries just signed a sales contract with a new customer. What is the future value of the contract payments at the end of the 4th year? Use the following cash flows and an 8% discount rate. The payment in one year is $75,530.76, payment in two years is $105,000, three years is $125,000, and payment in four years is $150,000.

- ◯ $369,439.98
- ◯ $402,311.19
- ◯ $489,512.14
- ◯ $502,619.01
- ◯ $452,000.00

Question 9 (1 point)

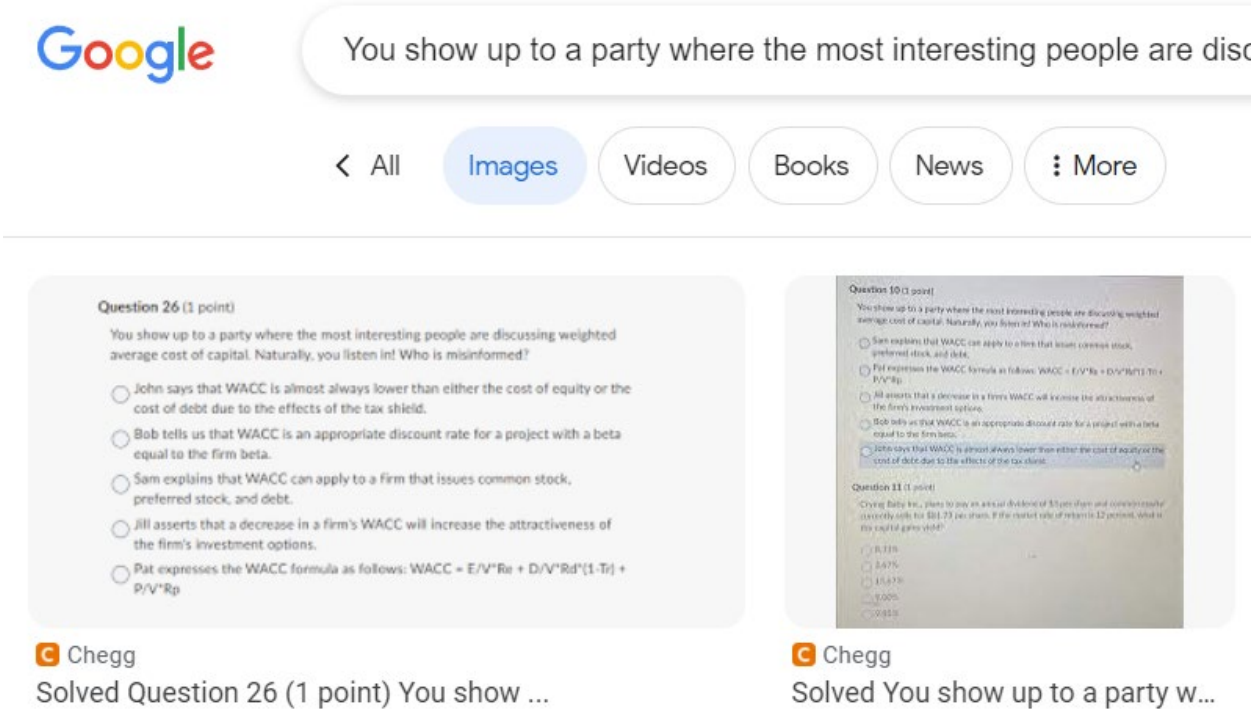
Precision Manufacturing made a $15,000 investment five years ago. It earned 7% with annual compounding. How much interest did Precision earn in these five years?

- ◯ $6,038.28
- ◯ $4,545.45
- ◯ $5,250.00
- ◯ $21,038.28
- ◯ $21,520.00

Question C:

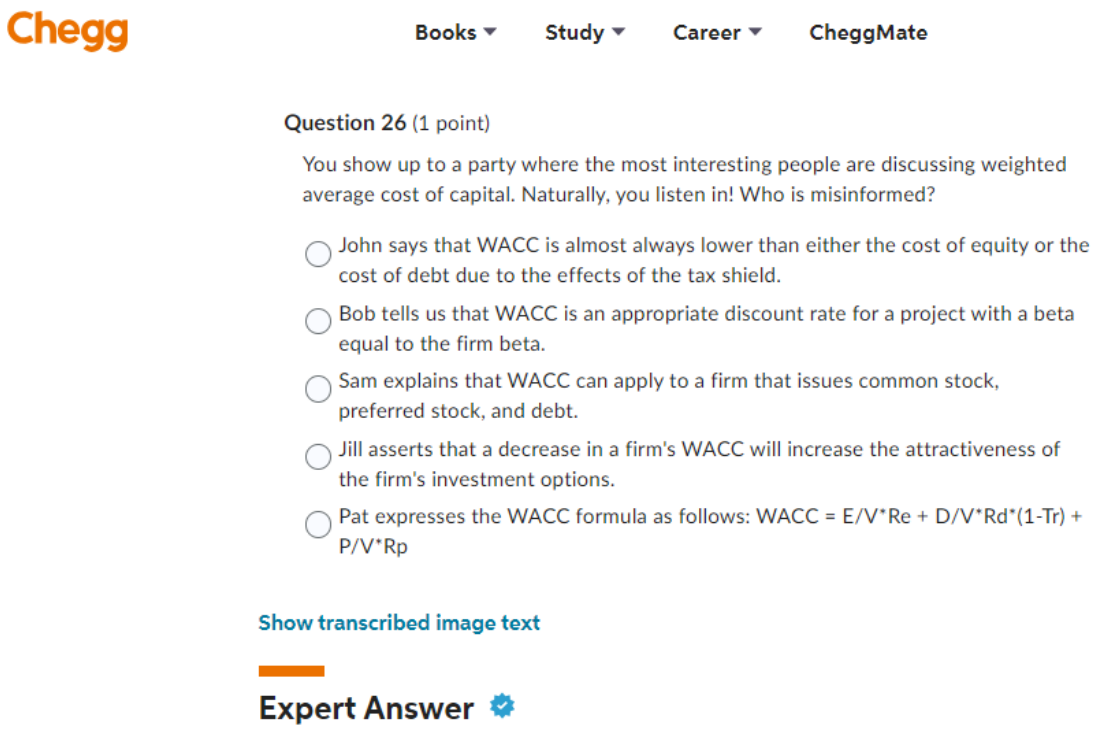
A unique version of the "party" question appeared only on the Fall 2022 final exam during the final exam week. The question was, "You show up to a party where the most interesting people are discussing weighted average cost of capital. Naturally, you listen in! Who is misinformed?" A google search produces two Chegg answers for Question C shown in Figure B-C1.

Figure B-C1: Question C Google Images



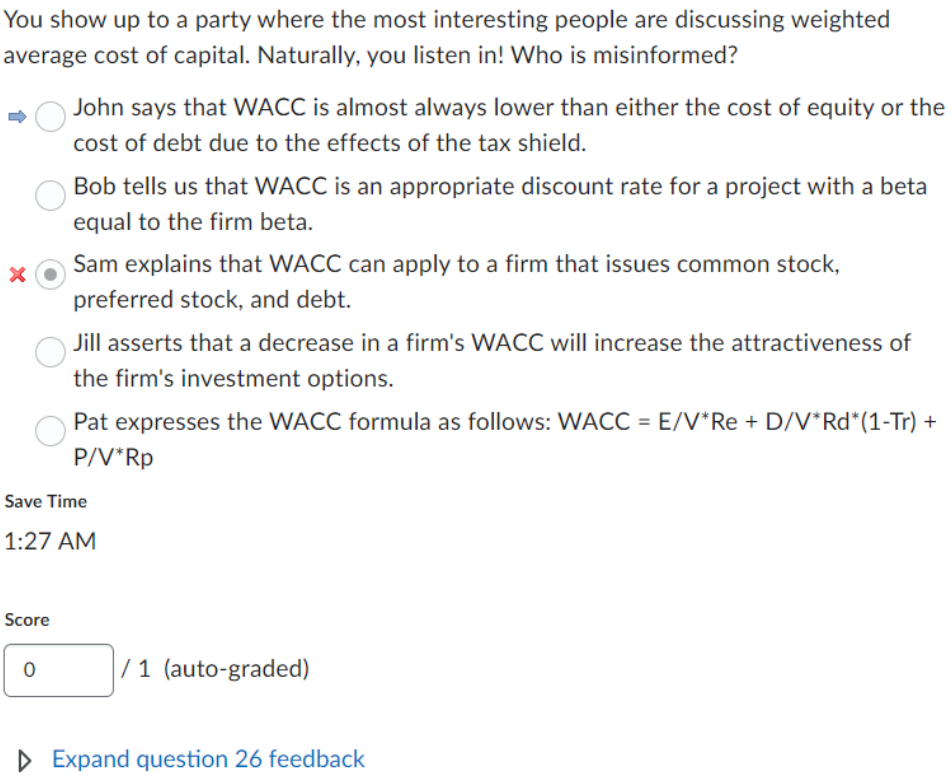
The first image shows the question as number 26 on an exam taken by a student. This image was only accessible during the final exam for 92 students in Fall 2022. The image appears consistent with a screen shot. See Figure B-C2 for a better image of Question C.

Figure B-C2: Question C Chegg Q26



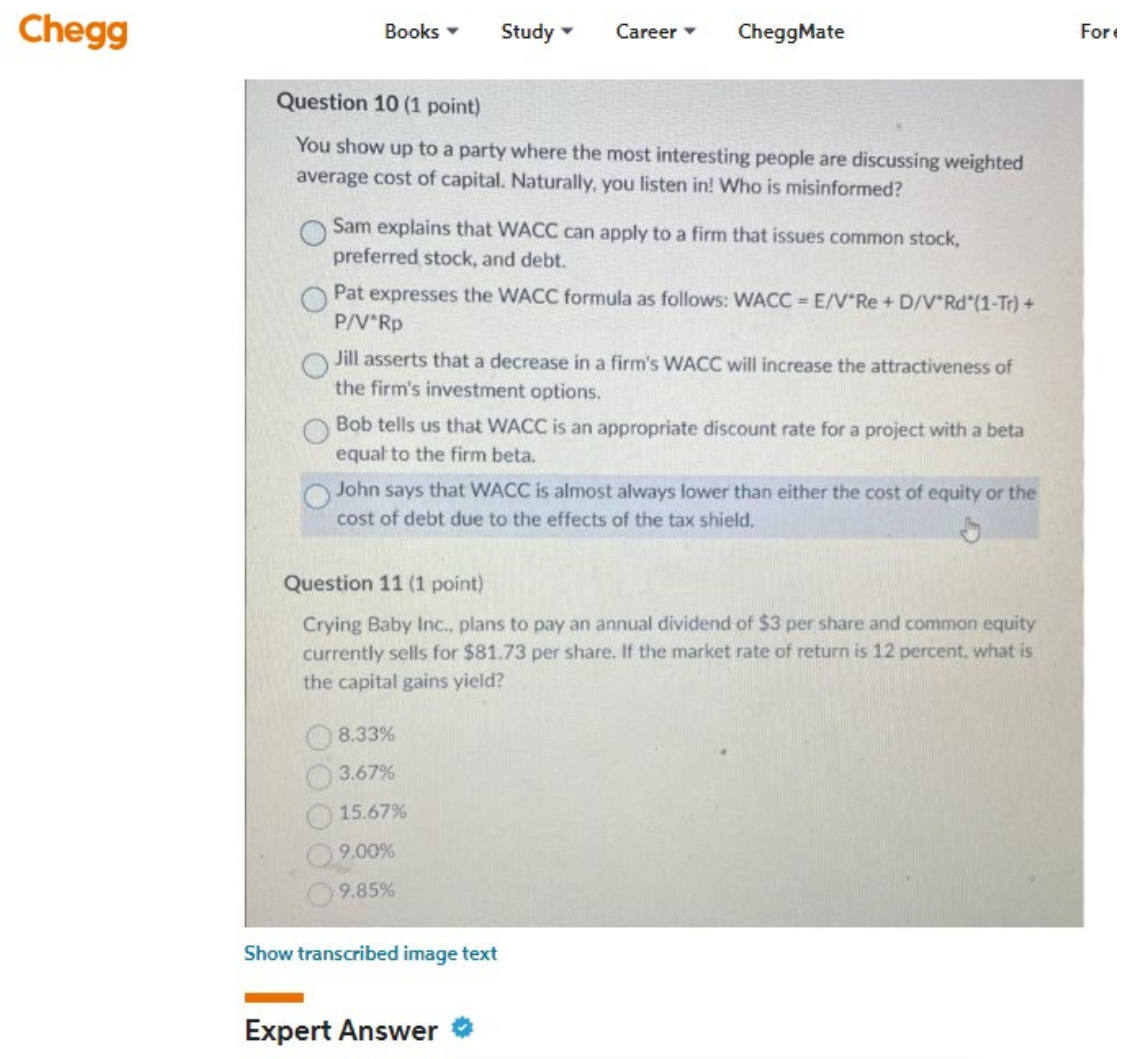
Investigation shows that only four of the 92 students had Question C as number 26 on their exam. Of the four, just one student had the same multiple-choice answers in the same order. See Figure B-C3 for a better image of D2L question that is an exact match of the Question C version posted to Chegg as number 26.

Figure B-C3: Question C D2L Q26



The second image shows the question as number 10 on an exam taken by a student. This image was likewise only accessible during the final exam for 92 students in Fall 2022. The image appears consistent with a photo. See Figure B-C3 for a better image of Question C as exam question number 10 posted on Chegg.

Figure B-C3: Question C Chegg Q10



This question is somewhat unusual in also having a second question included in the photo of Question C. Again, the most likely explanation for the appearance on Chegg is that a student took a picture during the exam. Investigation shows that only five of the 92 students had Question C as number 10 on their final exam. Of the five, just one student had the same multiple-choice answers in the same order. Furthermore, only four students had the "Crying Baby" question as number 11 on their Fall 2022 final exam. Just one of those four had the multiple-choice answers in the same order on their exam. See figures B-C4 and B-C5 for images of the exam questions.

Figure B-C4: Question C D2L Q10

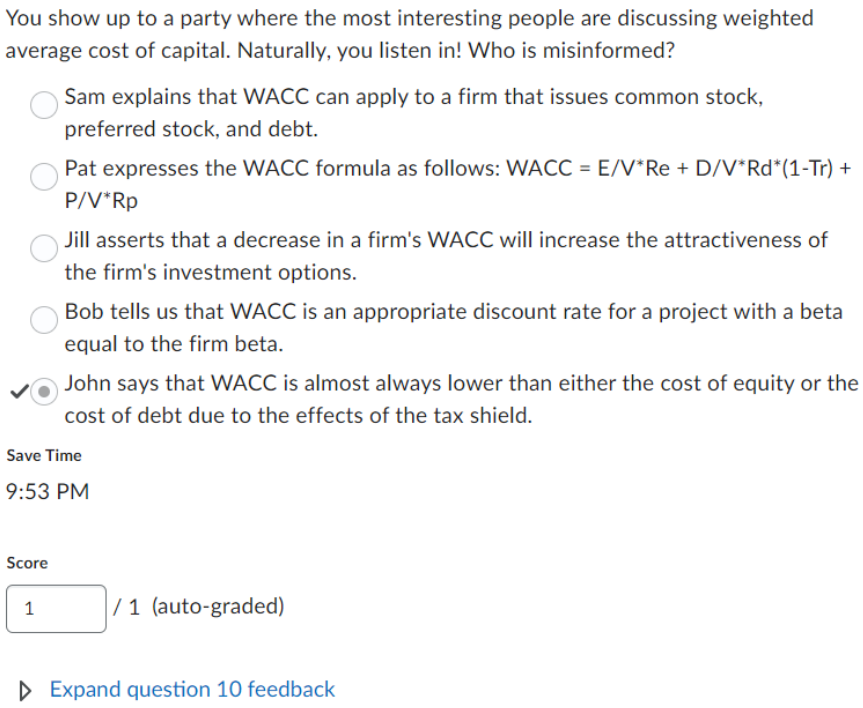
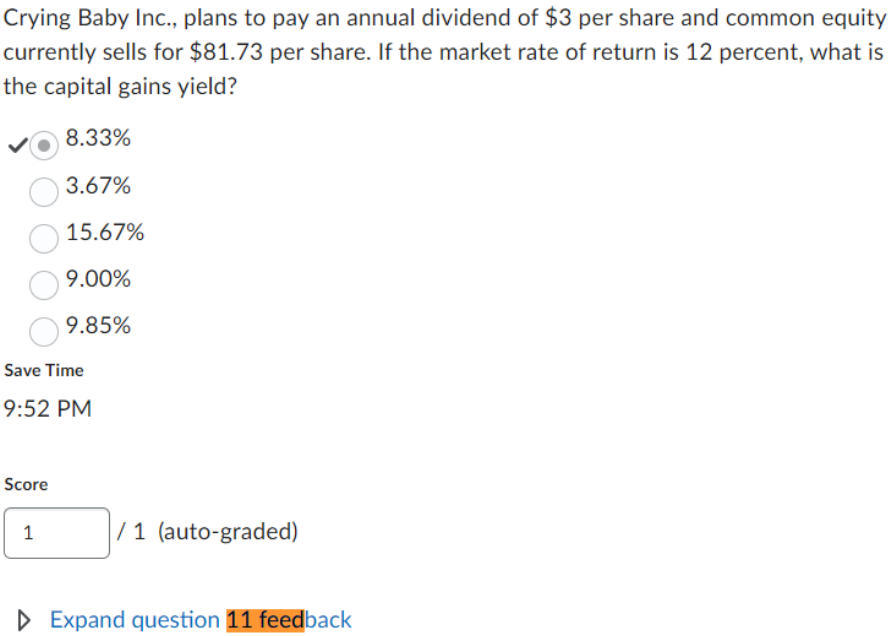


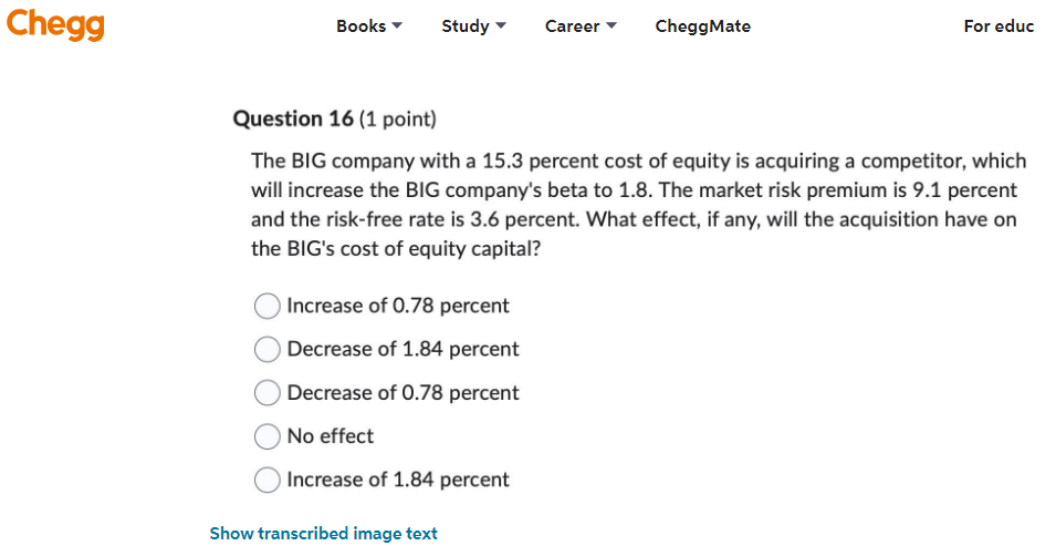
Figure B-C5: The "Crying Baby" Question D2L 11



Question D:

A unique version of the "BIG" question appeared only on the Fall 2022 final exam during the final exam week. The question was, "The BIG company with a 15.3 percent cost of equity is acquiring a competitor, which will increase the BIG company's beta to 1.8. The market risk premium is 9.1 percent and the risk-free rate is 3.6 percent. What effect, if any, will the acquisition have on the BIG's cost of equity capital?" A google search produces one Chegg answer for Question D shown as exam question number 16. The image shows Question D as number 16 on an exam taken by a student. The Chegg post shown in Figure B-D1 appears to be consistent with a screen shot.

Figure B-D1: Question D Chegg Q16



Investigation shows that only two of the 92 students had Question D as number 16 on their exam. Of the two, only one had the same multiple-choice answers in the same order. See Figure B-D2 for an exact D2L match of the Chegg question given in Figure B-D1.

Figure B-D2: Question D D2L Q16

The BIG company with a 15.3 percent cost of equity is acquiring a competitor, which will increase the BIG company's beta to 1.8. The market risk premium is 9.1 percent and the risk-free rate is 3.6 percent. What effect, if any, will the acquisition have on the BIG's cost of equity capital?

- ○ Increase of 0.78 percent
- ○ Decrease of 1.84 percent
- ➡ ○ Decrease of 0.78 percent
- ○ No effect
- ✖ ◉ Increase of 1.84 percent

Save Time

8:05 AM

Score

0 / 1 (auto-graded)

▷ Expand question 16 feedback