Building Training Methodology: Preparing Invigilators for Active, In-person, Exam Management

Cameron TC*, Salvia AC*, Hirji NZ*
*Humber College ITAL, *Sheridan College

Keywords
proctors, honour codes, academic integrity, exam management, active/passive, face-to-face, post-graduate, test

Abstract
This study assesses effective training methods that support in-person, post-graduate, exam invigilators to build awareness of institutional policies as well as heighten their comfort and confidence with invigilating in the exam setting. Vigilant, active invigilators are considered effective in reducing student cheating behaviour on exams (Alabi, 2014; Attoh Odongo et al., 2021; Feng & Ouyang, 2021; Siniver, 2013). This study followed 26 exam invigilators of varying experience through pre-training, training, and post-exam invigilation. Invigilators completed an online survey prior to participating in an in-person, half-day training session, self-identifying existing levels of experience, policy knowledge, and comfort/confidence in the exam setting in numerous situations. Upon completion of an in-person training session in a group setting, they completed a second online survey, which showed overall improvement. Invigilators were then assigned a live, in-person invigilation shift and following this, completed a third online survey. The study concludes that the training methods implemented foster confident and capable exam invigilators who support students’ compliance with academic integrity. With the shift to online testing during the COVID-19 pandemic, consideration needs to be given as to whether in-person invigilators retain the knowledge when they experience lengthy lapses of employment, and how their learned skills may be transferable to the online environment.

Introduction
Research indicates that post-secondary students committing acts of academic dishonesty, e.g., cheating in physical testing environments, is widespread and increasing in prevalence (Fendler & Godbey, 2016; Gurung et al., 2012; Levy & Rakovski, 2006; Shon, 2006; Siniver, 2013). Conservative estimates are that one in every five North American post-secondary students has committed some form of exam cheating (McCabe, 2005); the rate could be as high as one in two (Fendler & Godbey, 2016). According to Christensen Hughes and McCabe (2006), cheating in post-secondary environments across Canada may constitute “a serious problem” (p. 18). This culture of cheating has immense implications for what represents students’ actual knowledge, and calls
into question the credibility of faculty, credentials awarded by institutions, and the risk of carrying cheating behaviour beyond the educational institution and into the marketplace (Happel & Jennings, 2008). The research team aimed to identify and build an effective training protocol for in-person exam invigilators in post-graduate college examinations in specialty nursing courses with the goal of standardizing an active invigilation approach.

Role of Invigilators
Examination serves multiple purposes, including measuring learners’ abilities, scholarship obtainment, and determining whether course-learning objectives are met (Alabi, 2014). Invigilators are considered key to maintaining test security; they are tasked with thwarting student cheating behaviours (Mafa & Gudhlanga, 2012; Stonecypher & Wilson, 2014). Shon (2006) reinforces that cheating occurs when invigilators are inattentive, but suggests that even active invigilators must heighten their awareness during exam management. The literature describes active invigilation as circulating the room, monitoring student behaviour, and maintaining a controlled environment, in turn standardizing the student experience. It also establishes “the extent of the knowledge or skill acquired” (Alabi, 2014, p. 59), and yields benefit to all educational stakeholders (Alabi, 2014). Ray et al. (2018) concur. Viewed through the lens of pharmacy education, they emphasize the need for invigilators to receive training that is targeted to the seriousness of their tasks: how to manage misconduct and deal with “other emergent situations” (p. 1129). Minott (2019) offers that the use of reflective practice, such as journaling, could help invigilators to build on required skills such as adaptability. Ray et al. (2018) recommend having a faculty member available to aid with supervision (the faculty member should not be associated with the material in fairness to all students writing the exam). Ray et al. further propose determining a reasonable invigilator-to-student ratio, e.g., 1:25. All said, there is a dearth of both quantitative and qualitative research identifying optimal forms of invigilator training. Case in point, Minott (2019) states that there is a “lack of attention” (p. 97) in the literature devoted to the responsibilities, roles, and professional development of invigilators; having searched 65 databases using related key terms for the years 2000 through 2019, the author found only “28 ‘hits’” (p. 97). In terms of both distance and online education, the research suggests physical exam invigilation as the best system to assure both integrity of the examination process and cost-efficiency in exam management (Pittman, 2015).

Method
A self-reporting, survey approach to inquiry was used to measure invigilators’ perceptions of confidence with upholding the Test & Exam Policy, and application and adherence to academic integrity as it applies to this institution (current as of 2017/2018). Additionally, it measured comfort with vocabulary used in the examination setting. Surveys were administered electronically at three points in time via Survey Monkey.

Research Question
The study aimed to address the research question: How effective is in-person, scenario-based, case analysis training in preparing invigilators for effective in-person exam management in the post-graduate, college environment? This quality assurance study probed the need for the review of existing institutional exam testing procedures, with the aim of proposing improvements to training methods.

Training Protocol
After having trialed several different exam invigilator training methods prior to this study, the research team constructed both pre- and post-training surveys and short answer questions to evaluate the effectiveness of the following proposed educational intervention: an in-person, scenario-based, case analysis training methodology aimed at preparing invigilators for active in-person exam management in the post-graduate, specialty nursing environment.

Participants received a half-day, in-person, educational session led by the principal investigator. Participants were given a training workbook, engaged in activities related to exam monitoring (i.e., logistics of room set up, execution of role duties) and participated in scenario-based discussions inspired by a series of videos (see Appendix for video link). Active learning strategies were based on literature findings that recommend using active versus passive invigilation techniques to manage the exam environment and uphold academic integrity.

Invigilators began with a pre-training, online survey that posed a variety of closed-ended questions on existing invigilating experience, knowledge and understanding of the institutional Test & Exam Policy and academic integrity tenets, and confidence to apply their skills when confronted
with both conventional and unconventional scenarios that may transpire in a live exam setting.

**Study Design**

The survey approach was considered appropriate to bridge the gaps found: (a) within the literature based on both active versus passive invigilation, and (b) in invigilators’ classroom experiences.

Multiple-choice questions assessed knowledge about invigilating experience and test and exam policies. Likert-scale questions enabled participants to self-rate their level of knowledge over the study duration, as well as their confidence to actively invigilate. Open, short-answer questions asked participants what mechanisms could be put into place to increase their comfort and confidence levels to invigilate. Furthermore, a case study scenario was provided to participants to test their knowledge and its application. The quantitative surveys were administered pre- and post-training, and post-invigilation. The qualitative, short answer questions were posed at post-training and post-invigilation periods. The case study question was posed in the post-invigilation survey. Each online survey took participants about 20 minutes to complete. Survey data was collected over two cohorts.

**Participants**

This study enrolled 26 voluntary staff members (faculty and support staff), including both experienced and newly recruited exam invigilators, with the pragmatic goal of applying learned skills in near-future invigilation shifts, i.e., overseeing active classroom exam management. Informed consent was obtained; research participation was voluntary. Participants were given a $25.00 CAD gift certificate upon completion of all three online surveys. The study took place at a large polytechnic college in an urban area in Ontario over the 2017/2018 academic year.

**Data Analysis**

Data analysis was conducted in Excel. Quantitative measures examined invigilator knowledge of the Test & Exam Policy. Qualitative responses to case studies were evaluated using a scoring rubric. Study participants were assigned a unique identification number to ensure confidentiality.

**Results**

**Knowledge of Institutional Test & Exam Policy**

Knowledge of the Test & Exam Policy varied among the participants, but showed overall improvement with the six points surveyed over time: scenarios involving cell phones, washroom breaks, water bottles, watches, scarves, and leaving the exam room early. Additionally, when comparing the post-training and post-invigilating surveys to the initial results, most participants had not thoroughly read the policy after the live training session; they claimed that they had read the policy only after completing an actual invigilation shift. In response to the case study scenario, eight participants replied. All eight respondents identified seeking further departmental support and seven out of eight respondents identified providing the students with a reminder of the policy as successful strategies in managing a late arrival. Results are charted in Figure 1 and the case study scenario appears in the survey questions presented in the Appendix.

**Invigilator Perceptions – Application & Adherence to Academic Integrity**

Prior to the live training session, most of the participants believed they had a general understanding of the institution’s academic integrity policy, with a few of them indicating they had an extensive understanding. Post-training and post-invigilation, most of the participants indicated they had an extensive understanding of academic integrity. Results are charted in Figure 2.

**Invigilator Perceptions – Confidence with Test & Exam Policy**

Prior to the live training session, there were some participants who self-identified as not at all confident or not confident regarding the Test & Exam Policy. Post-training and post-invigilation, all participants shifted into the neutral, confident, and extremely confident categories. Results are charted in Figure 3.

**Invigilator Perceptions – Comfort with Vocabulary**

Prior to the live training session, participants were asked, “How comfortable would you feel right now having a conversation with a student and informing them that due to their late arrival to the exam (regardless of any reason they may present) that they cannot enter the exam room at
Prior to the live training session, there was a relatively balanced number of individuals across all categories. This could be related to the fact that there were two cohorts of people who completed the initial survey. Post-training, most participants had not thoroughly read the policy after the training session. Post-invigilation, they claimed that they had read the policy only after completing an actual invigilation session.

In response to the question, “What would help you to be more confident/comfortable in your role as an exam invigilator?” participants self-identified more experience/more practice.

Three invigilators responded to an open-ended question asking them to identify any situations that came up during their invigilation shift for which they felt unsure of how to respond. Two wrote about cases of students viewing the papers and answers of other students nearby; with no extra seating available to move students, the invigilators wondered what to do aside from watching closely and reporting their observations. One invigilator commented on a student having only an unacceptable work identification card on the desk, as they had left the acceptable student identification card and/or acceptable government-issued
Figure 4. Invigilator Perceptions – Comfort With Vocabulary

Identification in a backpack in the designated area; the invigilator wanted guidance on what to do since accessing backpacks is not allowed in the exam room. The question prompt appears in the survey questions presented in the Appendix.

Discussion

Based on literature recommendations regarding active invigilation, and the principal investigator’s invigilation experience, an in-person, educational intervention was designed using active learning strategies for in-person management of post-graduate nursing exams. The recruitment sample consisted of 26 study participants, all of whom had varying degrees of invigilation experience. The participants demonstrated increased confidence (self-assessment), comfort (self-assessment), and knowledge of both academic integrity processes and the Test & Exam Policy after completion of all trainings (and having worked through scenario-based case analysis questions). To support retention, the active learning strategies included online problem-based scenarios to serve as a job-aid and review tool for invigilators; the objective was to provide: (a) formative feedback to invigilators, (b) rationale for decisions, (c) recommended actions to the various authentic predicaments which arise during exam invigilation, and (d) a reference tool.

Government-imposed lock downs during COVID-19 have prompted institutions globally to turn to digital learning, universal design, and remote exam invigilation services to maintain course offerings and continuity; however, remote exam invigilation varies in both methodology (D’Souza & Siedfeldt, 2017) and, in some fields, lacks standards (Gary, 2020). The in-person training intervention discussed in this study (consisting of active learning strategies) was conducted prior to the COVID-19 pandemic. To be clear, the endeavour was to develop standards that could be used in physical exam environments; the study was not designed for online exam management. There is an assumption in the literature that physically separating students from invigilators—as occurs in online examinations—may only exacerbate student cheating behaviour, as well as raise student levels of anxiety (Parker et al., 2021).

There also appears to be debate in the literature as to the ongoing merit of creating and administering invigilated versus non-invigilated exams while institutions continue to wrestle with student cheating behaviour (Harris et al., 2019). Killam et al. (2021) suggest educators in nursing can start by incorporating slight changes in their assessment strategies based on critical care pedagogy (CCP) and universal design for learning (UDL) with the aim of reducing cheating by bridging the gap between theory and practice, e.g., talking to students about why academic integrity is important and establishing trusting relationships. From there, educators can craft meaningful and measurable learning outcomes that support students, promote critical thought, and build knowledge and mastery (Killam et al., 2021). However, there remains a question as to whether the implementation of authentic assessment is feasible due to its “resource intensive nature” (Birks et al., 2020, p. 13).

Limitations

Of note, while some invigilators received timely scheduling of their invigilation shift (within a month of their training date), others experienced a lengthy delay. Due to fixed exam dates not matching invigilator availability, as well as one weather-related college closure, and the need to reschedule one training date, the intended plan to train and invigilate within a few weeks was not possible for some participants.

Future Directions

Should in-person, post-graduate nursing examinations resume post-pandemic, the research team would be interested in measuring learning retention of the invigilators...
who previously participated in the research study. Research suggests that learners retain “90 percent of what they Do as they perform a task” (Anderson, n.d.). The research team could measure retention through the administration of a pre-refresher test, a refresher module, and post-refresher test. If required, future training could include other learning strategies that promote retention, e.g., peer-to-peer teaching (Tullis & Goldstone, 2020) as well as reflection through journaling (Minott, 2019). As observed in the knowledge of the Test & Exam Policy results, some participants self-identified the importance of reading the Test & Exam Policy only after their invigilation shift, demonstrating value in reflection as a supportive learning tool worthy of future investigation. Further, as some literature recommends ongoing investigation of the relationship between academic integrity and the online learning environment (Reedy et al., 2021), the research team is interested in whether (and what) knowledge acquired by invigilators trained for the in-person environment is transferable to the online environment and/or what skill set is required for invigilating in the online learning environment. Future research must also explore how the in-person invigilation landscape has changed since COVID-19.

Lastly, in a broader context, if the trend toward online examination persists post-pandemic, should academic integrity research focus on specific student cheating behaviours, e.g., collaboration, in non-invigilated online testing environments (Vasquez et al., 2021) or should it further probe the extent to which online invigilation curtails cheating in online exams (Dendir & Maxwell, 2020)? Current literature suggests some degree of success in “authenticating who the test-taker is” (Dawson, n.d., p. 3). Alternatively, does the approach require, as Reedy et al. (2021) suggest, studying a wider convergence of exam design, invigilation processes, and technological capability?

Impact
The assumption that invigilators are reading policy does not result in knowledgeable, confident, and comfortable exam invigilators. To support academic integrity among students in the in-person exam setting, we must support invigilators. A team of active, stringent, and capable invigilators who know what to do and how to respond in a variety of scenarios is desired. The implemented training methodology showed self-identified improvement in knowledge and understanding. While it did not measure engagement, the research team observed that invigilators were active participants in both the training sessions and the online surveys; they asked questions, shared anecdotes, and demonstrated a strong desire to collaborate and support each other as a team. It remains the goal of the research team to foster open dialogue among invigilators, to provide opportunities for skills review training, and to continue to build upon this foundation to uphold integrity in the exam setting.

Conclusion
The research team contends that their approach to in-person invigilator training demonstrates promise in developing informed, comfortable, confident, and capable invigilators who, in an academically rigorous manner, through keen observation, adherence to policy, and cooperation with procedure, can support student compliance with academic integrity.

Conflict of Interest
The authors declare that no conflict of interest or monetary interests exist.

Acknowledgement
Senay Habtu, Craig MacCalman, Heidi Marsh, Nicole Monette, Chris Pankewich, Scott Williams, Siobhan Williams

Funding
This study was funded by the Teaching Innovation Fund through the Centre for Teaching and Learning, Humber College, ITAL in the 2017/2018 academic year.

Note on Contributors
Cameron, TL, BA, Program Advisor, Continuous Professional Learning, Faculty of Health Sciences and Wellness, Humber College ITAL, Toronto, Ontario, Canada tammy.cameron@humber.ca. Principal Investigator of the Exam Invigilator Training Project.
Salvia, AC, MEd, Developer, Continuous Professional Learning, Faculty of Health Sciences and Wellness, Humber College ITAL, Toronto, Ontario, Canada adriana.salvia@humber.ca. Co-Investigator of the Exam Invigilator Training project.
Hirji, NZ, MN, MSc, Executive Director, Continuing and Professional Studies, Sheridan College, Brampton, ON, Canada nazlin.hirji@sheridancollege.ca. Senior nursing and academic leader and administrator.
Editor’s Note
In 2021, Teaching Innovation Fund (TIF) was restructured into the Seed and Cultivate Research and Innovation Funds offered by Humber’s Office of Research & Innovation.

References
HumberCTL. (n.d.). Playlists. [YouTube channel]. Retrieved December 6, 2022, from https://www.youtube.com/playlist?list=PLVZd4Ttp3K9XhZ75Wjdqmxa7Eh1h5Zbi
Humber College. (2017, June). Test & exam policy. School of Health Sciences Humber ITAL.
Mafa, O., & Gudhlanga, E. S. (2012). Examination management as a way of achieving quality assurance in ODL institutions. Turkish Online Journal of Distance Education, 13(2), 147-157.
Appendix

Universal Survey Questions on all Three Surveys (pre-training, post-training, post-invigilating)

Instructions:
This survey is anonymous and voluntary. Your name will be coded into an ID number by a third-party Research Assistant. Researchers will be given data only; no identifier will be shared. To protect the integrity of the survey, it is essential that you answer the questions honestly and independently, without referring to any source or guide to find the answers to any given questions. It is okay if you don’t know a specific answer; this has no impact on your role or employment status. Thank you for your cooperation in protecting the integrity of the research data collected.

For each of the following questions, select the most appropriate answer to reflect your current knowledge and understanding.

1. Tell us about your invigilating experience to date:
   a) I have no experience invigilating student exams.
   b) I have minimal experience invigilating student exams.
   c) I have some experience invigilating student exams.
   d) I have extensive experience invigilating student exams.

2. Tell us about any invigilator training you have received to date:
   a) I have never participated in any formal invigilator training.
   b) I have participated in invigilator training session(s) with other institutions.
   c) I have participated in invigilator training session(s) with this college.

3. Tell us about your current understanding of academic integrity.
   a) I have no understanding of academic integrity.
   b) I have minimal understanding of academic integrity as it applies to education.
   c) I have some general understanding of academic integrity as it applies to post-secondary education.
   d) I have extensive understanding of academic integrity as it applies to this college (AI (Academic Integrity)
Integrity) pledge, AI pledge ceremony, AI videos, AI social media campaign).

4. Tell us about your knowledge of the school’s Test and Exam Policy to date:
   a) I have never seen the policy.
   b) The policy was provided to me, but I have not had time to read it yet.
   c) I have glanced at the policy but have not read everything in detail.
   d) I have read the policy thoroughly.

5. With the knowledge that you have to date about the school’s Test and Exam Policy, please respond to each of the following scenarios:
   a) Students may bring personal cell phones into the exam room.
      True / False / I don’t know.
      Explanation:
   b) Students may sign out and in once for washroom privileges.
      True / False / I don’t know.
      Explanation:
   c) Students may bring transparent water bottles into the exam room.
      True / False / I don’t know.
      Explanation:

6. A student raises their hand and tells you that there is a glare in the room and they cannot see the clock or projected time on the screen/whiteboard. They want to use their personal watch to keep an eye on the time. May the student wear their personal watch or place it discreetly on their desk? YES / NO

7. A student has completed their exam and wishes to leave early. Twelve minutes testing time remains. May the student quietly and discretely collect their belongings and leave the room? YES / NO

8. How confident would you feel with the exam process and upholding the Test & Exam Policy right now if you were to walk into an exam room of 35-70 post-graduate students for the purpose of invigilating a final exam? Not at all confident / Not confident / Neutral / Confident / Extremely confident

9. How comfortable would you feel right now having a conversation with a student and informing them that due to their late arrival to the exam (regardless of any reason they may present) that they cannot enter the exam room at the current time?
   Very uncomfortable / Uncomfortable / Neutral / Comfortable / Very comfortable

10. Please rate your current skills in applying and adhering to academic integrity policies?
    Weak / Developing / Capable / Strong / Exceptional

Additional Survey Questions on both Surveys 2 (post-training) and 3 (post-invigilating)

1. What would help you to be more confident and comfortable in your role as invigilator?
   Strongly disagree / Disagree / Neither agree nor disagree / Agree / Strongly agree

Additional Survey Questions unique to Survey 3 (post-invigilating)

1. Please note any situation for which the training did not prepare you.

2. Imagine the following scenario: A student arrives 35 minutes late. She arrives at 9:35 a.m. for a 9:00 a.m. exam start. She was in a minor car accident on the way to the college and shares this information. She displays no immediate signs of injury. She confirms that she is fine and does not need to go and see a doctor. She explains that she is late because she took the time to exchange information with the driver of the other car. She wants to write her exam with her group. She further explains that she has arranged childcare for her two children at this time and that she has a night work shift starting at 11:00 p.m. She wants to write her exam now so she can go home and rest before her work shift. Coincidentally, one student has just left the exam room. What would you do in this situation to help this student?
3. The previously attended invigilator training session provided me with a solid understanding of the school’s Test and Exam Policy.

   Strongly disagree / Disagree / Neither agree nor disagree / Agree / Strongly agree

4. This previously attended invigilator training session provided me with a solid understanding of academic integrity.

   Strongly disagree / Disagree / Neither agree nor disagree / Agree / Strongly agree

5. Please note any situation for which you still felt unsure of or did not know what to do.

6. Please note any challenge you faced; what did you do? Was your action effective?

7. Please provide any additional feedback concerning your training and/or your invigilating experience that you would like to share as well as anything you recommend adding or removing from the training curriculum.

   **Link to Scenario-Based Invigilator Training Videos**

   [Invigilator Training Videos](https://www.youtube.com/playlist?list=PLVZd4Ttp3K9XVhZ75Wjldqmx7Eh1h5Zbi)