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EXAMINATION PERFORMANCE OF OPHTHALMIC ASSISTANTS USING RUBRICS FOR EXAMINATION PREPARATION

BY

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Dedication

My thesis is dedicated to my father, John H. Simms. He taught me to pursue my goals with integrity and perseverance. He was and will always be my first and most influential mentor.

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Abstract

This study investigated the effect of clinical skills rubrics on the Certified Ophthalmic Assistant (COA) examination performance. Based on constructivist learning theory, it hypothesized there would be no difference in the mean score and pass rate between the examination candidates provided with clinical skills rubrics and those not. This quantitative correlational study compared candidates from 2023 who had rubrics (n=397) with candidates from 2022 who did not (n=406). A limitation was the inability to determine how many 2023 candidates used the rubrics. Results showed no significant differences, supporting the hypothesis that rubrics had a neutral effect. Despite this, the study highlighted the importance of standardized assessments and suggested further research. Recommendations include using mixed methods for qualitative feedback, analyzing specific content areas, and controlling variables using the same timeframe for all groups. These steps could enhance understanding of rubrics' effectiveness and refine training strategies for ophthalmic assistants.

Keywords: Clinical skills rubrics, ophthalmic assistant, constructivist learning, on-the-job training, exam performance

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List of Abbreviations

AOP: Allied Ophthalmic Personnel

CME: Continuing Medical Education

COA: Certified Ophthalmic Assistant

COMT: Certified Ophthalmic Medical Technologist

COT: Certified Ophthalmic Technician

EPA: Entrustable Professional Activities

ICO: International Council of Ophthalmology

IJCAHPO: International Joint Commission on Allied Health Personnel in Ophthalmology

OA: Ophthalmic Assistant

OJT: On the Job Trained

OMT: Ophthalmic Medical Technologist

OT: Ophthalmic Technician

Chapter 1. Introduction

This research delves into a crucial question: What is the correlation between using rubrics for exam preparation and performance on a nationally recognized certification examination? The aim is to explore whether using rubrics for self-assessment or evaluation of clinical skills can significantly enhance the performance of candidates on the examination. Drawing on constructivist theory, the proposal is that hands-on learning could amplify skill acquisition, improving examination performance.

Allied Ophthalmic Personnel

This study focuses on allied ophthalmic personnel, a professional cadre integral to eye care teams worldwide. The diversity of this cadre, stemming from educational backgrounds, legislation and practice regulations, and the country of employment (International Council of Ophthalmology [ICA], 2015), underscores the global reach of the research. As the Cambridge Declaration of 2015 affirms, allied ophthalmic personnel can be opticians, ophthalmic nurses, orthoptists, ophthalmic and optometric assistants, ophthalmic and optometric technicians, vision therapists, ocularists, ophthalmic photographers/imagers, and ophthalmic administrators, depending on the country of employment (ICA, 2015).

The aim was to address the complexity of the worldwide classification of allied ophthalmic personnel, which has led to the need to coin the name. Allied ophthalmic personnel can obtain certification at three levels: ophthalmic assistant, ophthalmic technician, and ophthalmic medical technologist (International Joint Commission on Allied Health Personnel in Ophthalmology [IJCAHPO], 2019-a). This study focuses on the ophthalmic assistant level, but the broader classification system warrants further exploration.

Ophthalmic Assistants

In North America, ophthalmic assistants are not independent practitioners and cannot work independently. Ophthalmic assistants work under the direction of an ophthalmologist, a medical doctor, and a surgeon in private practice, university eye clinics, and hospital eye clinics (IJCAHPO, 2018).

The ophthalmic assistant's scope of practice includes a preliminary workup before the patient sees the ophthalmologist. These tasks include visual acuity testing, intraocular pressure measurement, refraction, colour vision testing, pupil assessment, and many other ancillary tests performed as part of a patient workup (IJCAHPO, 2018). Ophthalmic assistants also perform diagnostic testing, typically adjunctive testing, to support the patient's visit with the ophthalmologist. Such testing would include visual field testing, imaging the anterior and posterior segments of the eye, ultrasound, and others.

International Joint Commission on Allied Health Personnel in Ophthalmology

The International Joint Commission on Allied Health Personnel in Ophthalmology (IJCAHPO) was founded in 1969 with the following mission: "The International Joint Commission on Allied Health Personnel in Ophthalmology (IJCAHPO) serves to promote global eye health and prevent blindness through training program accreditation, education, and the certification of Allied Ophthalmic Personnel" (2019-a p. 2). IJCAHPO's purpose is to determine an individual's knowledge and skills for the profession of ophthalmic assisting through multiple-choice examinations. Also, once certified, allied ophthalmic personnel maintain their certification through continuing medical education to ensure relevance in the field (2019-a).

IJCAHPO offers certifying examinations at three core levels: The Certified Ophthalmic Assistant, The Certified Ophthalmic Technician, and the Certified Ophthalmic Medical

Technologist (2019-a), which demonstrates that individuals meet the minimum standard level of competence and knowledge to provide patient care as part of the ophthalmologist-led eye care team (2019-a). IJCAHPO certifies over 35,425 ophthalmic professionals worldwide in 40 countries (Anderson, L.A., personal communication, January 19, 2021). Most certificate holders are in the United States of America, with Canada being a distant second. Certification for allied ophthalmic personnel is voluntary, although some workplaces require it for employment.

There are three eligibility pathways to the ophthalmic assistant certification examination. The first is graduation from an accredited clinical training program, the second is from an accredited non-clinical training program with 500 hours of work experience, and the third is completing an independent study course with 1000 hours of work experience. All work experience must be under the supervision of an ophthalmologist (2019-a).

Certified Ophthalmic Assistant

Certified ophthalmic assistant examination eligibility includes two formal and one on-the-job training pathway. Regardless of the path, the candidate will write the 200-question examination once eligibility has been determined. The examination is pass/fail, and IJCAHPO does not publish the passing score. Upon passing this multiple-choice exam, candidates will become Certified Ophthalmic Assistants (IJCAHPO, 2019-a).

Clinical Skills Rubrics

Rubrics are tools used traditionally for assessment. The clinical skills rubrics for this study included a collection of rubrics the IJCAHPO exam candidates used for study purposes. The rubrics package was given to test candidates once they had been accepted to sit the exam. While preparing for the exam, the candidates used the clinical skills rubrics to provide the proper steps for performing each skill, which helped them study for the exam.

Rubrics are a valuable way to assess entrustable professional activities (EPA) and provide formative assessment information to the learner. Therefore, if on-the-job trained learners have entrustable professional activities rubrics, they should learn better and perform better on the certification exam.

Constructivist Theory

The constructivist theory of learning surmises that knowledge is developed based on experience (Cobb & Bowers, 1999). The constructivist theory sees acquiring and refining knowledge and skills from situational experience (Cobb & Bowers, 1999). Schunk describes three perspectives on constructivism (2012):

1. Exogenous: acquisition of knowledge represents a reconstruction of structures that exist in the external world
2. Endogenous: Knowledge develops through the cognitive activity of abstraction and follows a generally predictable sequence
3. Dialectical: knowledge derives from interactions between persons and their environment

This study's participants were on-the-job-trained ophthalmic assistants. They learned their craft through situational experience while working in ophthalmology clinics. The constructivist theory and the dialectical perspective fit nicely with how ophthalmic assistants learn.

The rubrics could provide the on-the-job trained learners with the proper steps of ophthalmic skills that may not have been available otherwise and a standardized way to perform ophthalmic skills. However, since the learners used a standardized and vetted assessment tool to

complete the clinical skills, they should have had more opportunities to improve their skills and build their ophthalmic knowledge through experiential learning.

Problem Statement

It has been a concern for several years that there is a growing shortage of allied ophthalmic personnel. Studies have shown that there will be a need for more ophthalmologists in Canada to meet the rising demands of eye care (Woodworth et al., 2008). These reasons are primarily due to the aging population of baby boomers requiring eye care (Astle et al., 2011). Other studies have shown that using allied ophthalmic personnel as physician extenders is one possible way to increase the capacity for eye care (Astle et al., 2011). Studies have shown that certified ophthalmic assistants are more productive than their uncertified counterparts (Astle et al., 2011; Woodworth et al., 2008). More recently, in the United States, Dang (2021) corroborated this shortage by determining the shortage of ophthalmologists by state. Woodworth identified attributes of allied ophthalmic personnel and validated them in a focus group composed of ophthalmologists, clinic administrators, and experienced allied ophthalmic personnel (2008). Once validated, the attributes were sent via survey to ophthalmologists across Canada and the United States, asking them to compare certified and non-certified allied ophthalmic personnel for each attribute (Woodworth et al., 2008). Finally, the literature pointed to a need to increase the number of certified ophthalmic assistants in the workplace.

The literature on rubrics in ophthalmic assisting needs to be improved. No studies were found to determine if using rubrics in this setting can affect the certification examination pass rate. More research is required to determine if introducing ophthalmic clinical skills rubrics can improve learners' skills and, ultimately, their ophthalmic knowledge.

Purpose of the Study

This study aimed to determine whether introducing rubrics for assessing ophthalmic skills impacts examination scores. It focussed primarily on score changes and secondarily on the overall pass rate in the ophthalmic assistant certification exam.

Research Question

Can offering ophthalmic clinical skills rubrics as part of the preparation for the Certified Ophthalmic Assistant exam, administered by the International Joint Commission of Allied Health Personnel in Ophthalmology, influence the average score and pass rate of on-the-job trained candidates? The null hypothesis stated that there would be no difference in the mean score or pass rate between candidates who use the clinical skills rubrics and those who do not.

Significance of the Study

This study explored the potential correlation between using rubrics in exam preparation and Certified Ophthalmic Assistant exam performance. Providing rubrics during the preparation period allowed candidates to use them as tools for learning and self-assessment or to receive feedback from others on their clinical skills using the rubrics. According to constructivist theory, learning through the practical application of skills enhances understanding. If rubrics guide candidates in developing these skills, they are expected to perform better on the certification exam.

A positive correlation, or an increase in the overall mean score and pass rate of on-the-job trained candidates, would lead to an increased number of certified ophthalmic assistants. Furthermore, this could increase the productivity of allied ophthalmic personnel and improve eye care quality, as evidenced by productivity comparisons between certified and non-certified personnel. (Astle et al., 2011; Woodworth et al., 2008).

Conversely, a neutral effect, where no significant change in mean scores or pass rates is observed, would indicate that the rubrics have neither a positive nor a negative impact on the exam performance of on-the-job trained exam candidates.

An adverse effect, characterized by a significant decrease in the mean score and pass rate, would suggest that the assessment without rubrics was better than it should have been (false positives), the rubrics themselves were problematic, or the intervention changed assessment expectations, leading to poorer outcomes.

From 2020 to 2021, 2,128 candidates sat for the Certified Ophthalmic Assistant examination (IJCAHPO, 2021). Over 93% of those candidates (1,989) were on-the-job trained, meaning they had no formal education or assessments before taking the exam. This high percentage highlights the potential benefit of implementing a structured assessment process.

Constructivist theory emphasizes the role of experience in learning skills and knowledge (Cobb & Bowers, 1999). Providing standardized procedural steps (clinical skills rubrics) for each skill may enhance candidates' understanding, leading to improved performance with increased scores and potentially higher examination pass rates.

The multiple-choice certification examination underwent psychometrician validity and reliability, which defined the passing score for the exam. Scores below that number failed, and those at or above that value passed (Lahner, 2020). An increase in the overall mean score would suggest an increase in the average level of knowledge of those taking the certification examination. Also, using the rubrics themselves would likely increase the skill of these certified ophthalmic assistants, increasing the level of care they can provide as part of the eye care team.

Limitations

According to Mauch and Park (2003), a limitation is a factor that may affect the study but is not under the researcher's control; a delimitation differs, principally, in that the research controls it. The first limitation of this study included the willingness of candidates to participate by using the rubrics since they may need to see the potential benefit of using rubrics to help them study and choose not to use them. A second limitation was that there was no way to determine if candidates used the provided rubrics. There was no survey or mechanism to collect data from the candidates.

Delimitations

To ensure the study was manageable and could be completed reasonably, all certified ophthalmic technician and certified ophthalmic medical technologist examination candidates were excluded from the research. Only certified ophthalmic assistant examination candidates were enrolled. In addition, formally trained candidates were excluded, and only on-the-job trained candidates were enrolled. The assumption was that formally trained candidates would have formal assessments as part of their training, and on-the-job trained candidates would benefit most from using the clinical skills rubrics. Also, only exam participants from North America were enrolled in the study. The goal was to compare two homogenous groups because international candidates may have skewed the results due to differences in the scope of practice and training methods worldwide. By enrolling only candidates from Canada and the United States, the two groups that were compared were better matched. A final delimitation excluded candidates who had previously sat for the certified ophthalmic assistant examination and either failed or were rewriting for recertification. These situations could have skewed the results as the candidates would be at a different level than candidates attempting the exam for the first time.

Definitions

Allied Ophthalmic Personnel are committed members of eye health teams in every country who play an essential role in delivering high-quality, efficient, comprehensive eye services, including all persons, and achieving Universal Eye Health (ICO, 2015). In addition, allied ophthalmic personnel perform preliminary patient examinations and ophthalmic diagnostic testing to assist eye surgeons as part of the eye care team. However, allied ophthalmic personnel are not independent practitioners and must work under the supervision of a licensed ophthalmologist.

Certified Ophthalmic Assistants are ophthalmic assistants who have passed the IJCAHPO certification examinations at the ophthalmic assistant level.

Certified Ophthalmic Medical Technologists have passed all requirements for the IJCAHPO certification examinations at the ophthalmic medical technologist level.

Certified Ophthalmic Technicians have passed all requirements for the IJCAHPO certification examinations at the ophthalmic technician level.

The International Joint Commission of Allied Health Personnel in Ophthalmology (IJCAHPO) is a non-profit organization based in St. Paul, Minnesota, whose mission is "To promote global eye health and prevent blindness through training program accreditation, education and the certification of Allied Ophthalmic Personnel" (International Joint Commission on Allied Health Personnel in Ophthalmology, 2019-a). As part of this mission, IJCAHPO provides an online certification examination at three levels: Certified Ophthalmic Assistant, Certified Ophthalmic Technician, and Certified Ophthalmic Medical Technologist.

On-the-job training is non-formal training in the workplace as the learner works.

Ophthalmic pertains to the eyes.

Ophthalmic Assistants are entry-level allied ophthalmic personnel who do not hold a recognized credential.

Ophthalmic Technicians are intermediate-level allied ophthalmic personnel who do not hold a recognized credential.

Ophthalmic Medical Technologists are advanced-level allied ophthalmic personnel who do not hold recognized credentials.

Ophthalmologists are medical doctors licensed to treat eye diseases medically and with surgery.

The scope of practice describes various professional skills and duties within the law and licensing authority (CMPA, 2021).

Summary

Allied ophthalmic personnel are an essential part of the eye care team. Their scope of practice is clearly defined within North America but highly variable worldwide. Ophthalmic assistants are one group of allied ophthalmic personnel who work under ophthalmologists' direction, providing workup and diagnostic testing for eye surgeons. While some allied ophthalmic personnel are educated in formal training programs, most are trained on the job.

IJCAHPO provides several certification levels for allied ophthalmic personnel. Specific to this research, the certified ophthalmic assistant examination is taken by over 2000 candidates each year, and this study examined the effect of introducing ophthalmic skills rubrics to examination candidates to measure for an impact (if any) on the overall mean score and pass rate of candidates on the examination.

This research was built on the constructivist theory, which suggests that experience develops knowledge. The candidates eligible for this study were on-the-job trained learners

learning through experience. Using vetted rubrics outlining the proper and detailed steps for the skills, the candidates may have learned more and performed better on the examination.

Chapter 2. Review of the Literature

This literature review explored the background information for this thesis study, which focused on allied health personnel, specifically allied ophthalmic personnel. The literature review opened with a brief history of the profession and how it came into existence. Next, a discussion of licensure and certification provided the background to the specific certification exam.

The variable studied was the mean score of the certification exam results. Eligibility for this exam included formal training through accredited training programs or on-the-job training. A discussion of the definitions and differences between formal education and on-the-job trained learners provided the background for the participants in this study. The exam process is reviewed, including the number of candidates over the past five years and the candidates' process to apply for the exam.

Entrustable professional activities are the critical skills that define when someone new to the profession can work independently. Rubrics are assessment tools that can be used to assess EPAs. The literature review explored the development and validation of rubrics and ties rubrics as an assessment for entrustable professional activities. Further review explores rubrics specifically for ophthalmic assistants.

The final topic reviewed was the certification examination pass rate. This thesis focused on the pass rate of the ophthalmic assistant examination.

A brief history of allied ophthalmic personnel in Canada and the United States

Allied health professionals are health workers involved in patient care, not medical doctors or nurses (Association of Schools Advancing Health Professions [ASAHP], n.d.). These professionals would provide evaluation and testing for diseases and disorders, rehabilitation, and

management. Allied ophthalmic personnel are listed as one of the professions considered allied health professionals (ASAHP, n.d.). Through the 1930s and 1940s, professions developed to exert their independence from physicians. According to Donini-Lenhoff's (2008) study, occupational therapy, clinical pathology, and physical therapy were the first professions to develop accredited training programs. As more programs were added over the next few decades, the definition of the allied health professional evolved, paralleling medicine's trend to sub-specialization (Donini-Lenhoff, 2008).

In 1965, Stein (1968) founded the Association of Ophthalmic Assistants and the Ophthalmic Assistant Home Study course in response to an increased demand for eye care. This course was the first of its kind in North America and increased the number of ophthalmic assistants while providing further education to existing ophthalmic assistants (Stein, 1968). He continued to suggest that additional ophthalmic assistants would allow the ophthalmologists to increase the number of patients seen by 30% without reducing patient care or patient relations.

Four years later, in 1969, the Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO) was incorporated as a non-profit organization composed of five associations: American Academy of Ophthalmology and Otolaryngology, American Medical Association, Association of University Professors in Ophthalmology, Contact Lens Association of Ophthalmologists, and Society of Military Ophthalmologists (Schlossman, 2021). JCAHPO established certification of ophthalmic assistants at three levels: ophthalmic assistant, ophthalmic technician, and ophthalmic medical technologist. These levels were selected with input from the commission's member organizations' career ladder, allowing practitioners to move from one level to a higher one with work experience. This career ladder matches Stein's prediction and the

current percentage of on-the-job trained learners in 2021. These three categories and others were collectively called allied ophthalmic personnel.

As the profession grew and the number of allied ophthalmic personnel grew, more evidence surfaced that training allied ophthalmic personnel worldwide are required to meet the demand for eye care. Adding allied ophthalmic personnel to ophthalmology practices increased productivity through task shifting. Garg describes task shifting as redistributing tasks or parts of an exam to personnel with less specialization requiring less training (Garg et al., 2014). To conclude, personnel with less training cost less, allowing the expensive ophthalmologists to concentrate on tasks they are trained to complete. The shifted tasks would typically be time-consuming and not require the ophthalmologist's clinical judgment.

In 1968, Dr. Stein predicted that on-the-job training would be the most popular method for ophthalmic assistants (Stein, 1968). Subsequently, in the 2020- 2021 fiscal year, on-the-job training was still the predominant training method for allied ophthalmic personnel, with 93% of examination candidates (S. Larson, personal communication, September 24, 2021).

Certification vs. licensure (background and explanation)

The literature provides several definitions of certification and licensure, and their interpretations vary. For example, Zirkle and Jeffery (2017) and Raymond (2001) use certification and licensure interchangeably, describing both terms as allowing practitioners to practice within their given profession. Generally, each professional defines certification and licensure (Akey, 1987; Boulet & van Zanten, 2014). These requirements are meaningful and relevant to the profession, and individuals must meet these requirements to practice (Boulet & van Zanten, 2014).

In medicine, certification is held at a higher level than licensure (Boulet & van Zanten, 2014). Once licensed, physicians can specialize in specific areas and become certified. All other interpretations see certification as a lower level than licensure, which is relevant to this paper. Certification of allied health professions is awarded by non-governmental organizations or professional societies (Akey et al., 1987; Boulet & van Zanten, 2014; Cakiner-Egilmez, 2016). These organizations or associations set education, training, examination, and competency standards for attaining and maintaining certification (Akey et al., 1987; Cakiner-Egilmez, 2016; Miller, 2012). Certification recognizes competency and attests to education, skills, and training (Hittle, 2010). Each profession has specific titles and designations to be used by its certificate holders (Akey et al., 1987).

Licensure recognizes the skills and abilities needed for patient care (Hittle, 2010; Miller, 2012). It is granted by a governmental organization that may be national or regional (Boulet, 2014; Miller, 2012). Held at a higher level than certification, licensure is required for practitioners to enter the practice and provides them with legal authority to practice (Akey et al., 1987; Boulet & van Zanten, 2014; Cakiner-Egilmez, 2016; Miller, 2012).

Formal Education vs. On-The-Job Training

For ophthalmic assistants, there are two pathways to enter the profession. The first is through formal training programs, and the second is on-the-job training, as described earlier. The literature does not agree on definitions for formal education or on-the-job training. However, several common themes fit the purposes of this thesis. Formal education and on-the-job training have different expected outcomes, serving another purpose. On-the-job training occurs outside a formal educational institution (Neill, 2014). It occurs in the workplace while the student is

working. (Etling, 1993; Rothwell & Kazanas, 1990). Learning comes from peers and managers (Rothwell, 1990) and focuses on practical skills rather than theory (Romi & Schida, 2009).

One main benefit of on-the-job training is flexibility, which allows training to be customized to the individual (Bishop, 1991). The customization, for instance, can be tailored to the workplace or the individual learner since learning occurs while the learner is at work (Wood, 2004). A second benefit is that the learner is exposed to real-life experience in real time (Neill, 2014). Tying this to constructivism, the learner gains skills and knowledge through experiential activities.

The first disadvantage is that on-the-job training differs for each learner and may need more standardization since learning often depends on peers (Bishop, 1991; Wood, 2014). Peers and trainers may also need more formal training and, therefore, more theory behind knowledge and teaching bad habits. A second potential disadvantage is the workplace (Wood, 2014). If the workplace is a single specialty, the trainees may learn only that specialty and miss out on other areas of their profession, limiting their overall skills and knowledge.

Formal education occurs in a more traditional academic institute (Etling, 1993; Romi, 2009). Due to accreditation and reputation, formal education institutions would offer higher student assessment and accountability (Romi & Schmida, 2009). The benefits of formal education are higher salaries (Baum & Pavea, 2005) and more professional recognition (Fisher & Matarazzo, 1993). Another advantage is that two different professions have reported that formally trained candidates score higher on their first attempt at certification examinations (Greener, 2013; Herman, 2008). This is relevant to this thesis as allied ophthalmic personnel candidates can voluntarily sit for the national certification examination. Finally, when studying

medical dosimetry education, Greener (2013) found that higher levels of schooling produce professionals with a higher level of critical thinking.

The main disadvantage to formal education is the cost to the student (Adam, 2012; Elfin, 1996). In contrast to on-the-job training, formal education typically occurs during the day and regular work hours. Consequently, students can only work part-time while attending school. However, even with online education, including asynchronous options, it can only partially accommodate professions that require clinical experience and hands-on training. As a result, students in traditional education programs face higher training costs.

Formal education is more highly regarded than on-the-job training (Neill, 2014). Allied ophthalmic personnel use both methods of training. However, given the researched differences, an intervention that provides on-the-job training with an advantage would be helpful.

Overview of the exam process

The certified ophthalmic assistant certification examination is a multiple-choice exam offered by IJCAHPO. The examination is developed by the certification committee, which comprises subject matter experts in the field of ophthalmology. The committee includes allied ophthalmic personnel and ophthalmologists. IJCAHPO completes a job task analysis every five years to determine which tasks and skills ophthalmic assistants perform. The process involves surveying practitioners in the field on the importance of individual skills and the frequency with which they perform specific tasks. All data collected in the survey undergoes psychometric analysis to determine the relevant content areas, specific tasks, duties, and responsibilities of the COA profession. Based on this data, the committee decides how many questions will be included in the exam. It creates a blueprint outlining the percentage of each content domain represented on the examination.

There are three eligibility pathways for the certified ophthalmic assistant examination. The first is by graduating from an accredited clinical training program. There are no additional requirements for this pathway. The second is graduation from an accredited non-clinical training program plus 500 hours of work experience under the direct supervision of an ophthalmologist. The third pathway is the on-the-job training pathway that requires a high school diploma, or equivalent, and 500 hours of work experience under the direct supervision of an ophthalmologist (IJCAHPO, 2019a). Table 1 shows the number of exam registrations divided into two groups: the formally educated candidates (pathways one and two) and the on-the-job trained candidates. The years specified represent all the years this exam version was offered.

Table 1

Examination Candidates by Year

Year	Formal Education	On-the-Job Trained
2020-2021	139	1989
2019-2020	91	1876
2018-2019	119	2490
2017-2018	172	2497
2016-2017	162	2831
2015-2016	142	2954

The certified ophthalmic assistant exam is an online multiple-choice examination delivered through a PearsonVUE testing center. At the end of their appointment, candidates receive an unofficial status as a pass or fail on their exam and a breakdown of scores by content area. After verification, the candidate gets their official pass or fail from IJCAHPO.

Entrustable Professional Activities for Ophthalmic Assistants

In 2005, ten Cate introduced the concept of entrustable professional activities to connect the ideas of competency assessment and competencies concerning medical education. ten Cate (page 1177) defines specific attributes of entrustable professional activities:

1. are part of essential professional work in a given context
2. must require adequate knowledge, skill, and attitude, generally acquired through training
3. must lead to the recognised output of professional labour
4. should usually be confined to qualified personnel
5. should be independently executable
6. should be executable within a time frame
7. should be observable and measurable in their process and their outcome, leading to a conclusion ('well done' or 'not well done')
8. should reflect one or more of the competencies to be acquired

The trainee can progress into a field professional when using entrustable professional activities to assess competencies and competence (ten Cate, 2005). However, despite the entrustable professional activities being defined in 2005, the medical education community needed to implement them immediately due to many barriers related to culture, institution, and limited resources (Wentzel et al., 2020). Competency-based medical education (CBME) is an approach that uses entrustable professional activities and evaluates outcomes and associated milestones (Wentzel et al., 2020). In 2017, Queen's University became the first Canadian ophthalmology residency program to be CBME compliant. As the leader in this area, Queen's University is breaking ground for the competency-based education shift.

Development and Validation of Rubrics

Carraccio (2008) and Peña (2010) published reviews of the Dreyfus and Dreyfus Model, a framework for assessing clinical skill acquisition and its adaptation to clinical medicine. They discuss how the model works well for patient care and describe that it can be applied to other skills or competencies, if not with a few challenges. As these papers reviewed an earlier report, it was essential to check the original writing.

Dreyfus and Dreyfus (1980) describe a learner's journey to acquire new skills. They will go through several steps, starting at novice and culminating in mastery. Each step has defined elements that outline the student's understanding and ability to perform the skill. Dreyfus and Dreyfus explain that the novice understands the rules and parameters of the craft and must improve through practice and mentoring. After gaining experience, the learner becomes competent when completing recurrent meaningful patterns of the skill. Once the proficiency stage has been reached, the learner can complete the task under multiple situations and scenarios. The expert performs the skill with intellectual intuition. The expert can manage all scenarios, including ones not previously encountered. The final step is mastery. A master performs the skill without conscious attention to the learned principles (Dreyfus & Dreyfus, 1980).

When considering training, training aids must facilitate the learner's progression to the next steps while not impeding progress by holding them back (Dreyfus & Dreyfus, 1980). This can be extrapolated to assessment tools used with the learner and, therefore, assessments that can distinguish between the different stages of learning.

Curran (2011) used an intensive process to develop and validate rubrics and set out to create and validate a set of interprofessional collaborator competencies relevant to health care and social care professionals. Curran collected survey results and used qualitative and

quantitative methods to analyze their data. They used coding techniques of the transcripts from the focus groups to create a list of competency statements (delineated by importance and clarity). They created rubrics based on this data to suit their purpose and meet their needs.

Aulet et al. (2018) described their experience creating and validating a rubric for a single entrustable professional activity within a surgery clerkship clinical skills exam. They concluded that the rubric they developed was essential for assessing learning and providing formative feedback to the learner. However, while there is yet to be a consensus on which type of assessment is best for entrustable professional activities, this rubric is a promising step in its development (Aulet et al., 2018).

Rubrics in Ophthalmic Assisting

The International Joint Commission on Allied Health Personnel in Ophthalmology publishes a Core Criteria Handbook for Certification and Recertification. IJCAHPO defines allied ophthalmic personnel as individuals providing patient care and assisting ophthalmologists (International Joint Commission on Allied Health Personnel in Ophthalmology, 2019-a). Allied ophthalmic personnel's responsibilities include assisting in the patient workup, diagnostic evaluations, management, treating patients with eye disease, and patient education (International Joint Commission on Allied Health Personnel in Ophthalmology, 2019-a).

IJCAHPO offers certification for allied ophthalmic personnel, including at the ophthalmic assistant level. The multiple-choice examination content areas are developed through research conducted every five years that determines the typical task of ophthalmic assistants currently working in the field.

A qualitative review determined that certified ophthalmic personnel support ophthalmologists who provide high-quality care to patients (Astle et al., 2011). Astle et al.

reported that 79% of the Canadian ophthalmologists and Canadian allied ophthalmic personnel who responded said that certified ophthalmic personnel have improved skills and that most respondents attributed certification as a significant contributor to practice productivity measures. Astle's main conclusions were that training qualified allied ophthalmic personnel was needed and that adding certified allied ophthalmic personnel could increase the productivity of their practice.

The International Council of Ophthalmology (ICO) published its Ophthalmic Clinical Evaluation Exercise (OCEX) first in 2004, then again in 2020 with improvements (Palis et al., 2020). The OCEX is a vetted document used to assess ophthalmology residents worldwide. It was developed with input from international subject matter experts. The tool is specific to ophthalmology and is based on the Dreyfus scale that emphasizes actual performance and progression of competence acquisition (Palis et al., 2020).

Certification Examination Pass Rates

IJCAHPO publishes its annual value report, declaring the number of candidates who took the ophthalmic assistant exam (amongst other exams irrelevant to this thesis) and the pass rate (IJCAHPO, 2019-b). In 2019, the pass rate was 78% for 2426 candidates. More published papers are needed discussing predictors for pass rates for ophthalmic assistant examinations.

Summary

This literature was organized into the following categories: Allied Ophthalmic Personnel, the certification examination process, formal versus on-the-job trained learners, entrustable professional activities, developing and validating rubrics, applying rubrics to ophthalmology, and certification examination pass rates. Allied Ophthalmic Personnel are the focus of this study, and a brief history of the profession and how they came into existence opens the literature review.

Licensure and certification will provide the background to the specific certification exam being studied. A discussion on the definitions and differences between formal education and on-the-job trained learners will provide background information for the participants in this study. The exam process is reviewed, including the number of candidates over the past five years and the candidates' process to apply for the exam.

The literature suggests that entrustable professional activities have existed for some years. Still, the medical community only recently embraced this concept for assessing the clinical skills of individuals entering the workforce as professionals or, more accurately, as learners becoming professionals.

The final category researched pass rate predictors for the ophthalmic assistant exam. IJCAHPO's Value report from 2019 reports 2,426 ophthalmic assistant candidates taking the exam with a pass rate of 78%. This pass rate needs to account for which candidates were first-time vs. second- or third-time test takers and will need to be researched. The reasoning for this pass rate must be included in the literature search.

This research aims to provide an intervention of rubrics based on entrustable professional activities for candidates applying for the ophthalmic assistant exam and determine their effect on the overall pass rate.

Chapter 3. Method

Introduction

This quantitative correlational study examined the impact of clinical skills rubrics on the performance of on-the-job trained candidates on the Certified Ophthalmic Assistant (COA) certification examination. Drawing on constructivist learning theory, the study hypothesized that there would be a difference in exam performance between candidates who were provided the rubrics to guide their preparation and those who were not. The rubrics, created for this research by the researcher and validated by subject matter experts, provided step-by-step instructions for essential clinical skills that allowed candidates to self-assess or receive evaluations from others, enhancing their learning process.

The research design compared mean scores and pass rates between two groups of COA examination candidates: those who used the rubrics in 2023 and those who did not in 2022. This non-equivalent group design leveraged historical data for the control group and current data for the treatment group. Statistical analysis determined if the intervention of clinical skills rubrics significantly influenced exam performance. This study aimed to address a gap in formal training for on-the-job trained ophthalmic assistants, providing them with tools to ensure accurate skill acquisition and ultimately aiming to improve their certification outcomes through constructivist-informed experiential learning.

Quantitative Method

This study compared the mean score and pass rate of on-the-job trained candidates in the ophthalmic assistant certification examination who used the rubrics to those who did not. It was a quantitative correlational study informed by constructivist learning theory.

Constructivism

Constructivists believe that when individuals learn, they construct knowledge (Bruning et al., 2004, as cited in Schunk, 2012). Furthermore, Piaget believed active participation and involvement built understanding one step at a time. The learner is actively involved and not passive (Piaget, 1969, as cited in Amineh, 2015). These rubrics were designed to provide the correct steps for each skill. The rubrics were vetted by subject matter experts in the ophthalmic field.

Participants were provided with the rubrics while learning these skills in a clinical setting. While hands-on, they can learn the correct steps and procedures, increasing their knowledge of the subject. As the participants in this study were on-the-job and not formally trained, they would not have had the benefit of being trained in the skills. Therefore, their learning is largely experiential and requires the rubric to ensure they learn the correct steps and procedures.

Participants

Treatment Group

The treatment group consisted of the first 397 adults who completed IJCAHPO's Certified Ophthalmic Assistant Examination between June 1, 2023, and August 3, 2023. The inclusion criteria for the treatment group included on-the-job trained candidates from Canada or the United States and first-time exam takers. The clinical skills rubric package was sent to all candidates who met the inclusion criteria during this period.

Program-trained applicants had access to formal training and assessments. Since this study looked at the effect a training tool, the clinical skills rubrics, had on exam performance, the treatment group was only made up of on-the-job trained applicants. During the study recruitment period, the scope of practice and training opportunities was very similar within Canada and the

United States. Including applicants from only these countries produced a more homogenous treatment group of participants. Finally, only first-time exam takers were included to eliminate the chance of learning by performing the exam multiple times.

Control Group

The control group was the cohort of exam takers who had completed the examination before this study and, therefore, did not have access to the clinical skills rubrics since they had yet to be developed. To match the treatment group, all exam takers, 407 in total, who were on-the-job trained in Canada or the United States and were first-time exam takers, were selected from historical data between July 1, 2022, and September 8, 2022.

Research Design

Quantitative research is a method that examines the relationship among measured variables using statistical analysis (Creswell, 2014). The technique used for this thesis research was a correlational design. Specifically, this was a non-equivalent group design as the two groups compared were not randomly assigned (Maciejewski, 2020). The data collected in this study was a mean score comparison of the pass rates between the archived scores from 2022 and new test-takers in 2023. In addition, a statistical comparison was conducted to determine if the intervention of ophthalmic skills rubrics influenced the mean score or pass rate.

On-the-job trained ophthalmic assistants typically lack access to formal training and assessments. Therefore, they rely on others to teach them the proper steps to perform skills. For example, the background knowledge for performing ophthalmic skills may come from other ophthalmic assistants, preceptors, or self-study. By providing ophthalmic assistant examination candidates with clinical skills rubrics, they had tools to self-assess their skills or that they could provide to their preceptors to be used to assess their skills for them. In addition, the clinical skills

rubrics provided the learners with correct and vetted steps for each skill. The expectation was that the use of the rubrics would enhance skill performance. Constructivist theory suggests that through repeated experiential learning, the 2023 exam takers would build their knowledge of clinical skills by using the rubrics before taking the exam and would, therefore, perform better than the 2022 exam takers.

Phase 1: Clinical Skills Rubrics Development

The rubrics were developed as outlined by Dreyfus and Dreyfus (1980), who deconstructed the skills into small steps to create levels ranging from novice to master. The rubrics are similar to the International Congress of Ophthalmology's (ICO) Ophthalmic Clinical Evaluation Exercise to maintain the validity and standard set by the ICO for assessing the skills of ophthalmology residents.

The Clinical Skills Rubrics included skills derived from IJCAHPO's published Core Criteria Handbook for Certification and Recertification (International Joint Commission on Allied Health Personnel in Ophthalmology, 2019-a, pp. 8-14). All skills included in the Clinical Skills Rubric package were listed in the Core Criteria handbook and were part of the current ophthalmic assistants' scope of work. IJCAHPO had previously developed seven rubrics. The steps involved in performing the skills were determined by subject matter experts from IJCAHPO's certification committee. I created the remaining 16 skills rubrics using the same format and published content areas. In total, 23 skills were identified, as shown in Table 2, and a rubric for each skill was developed.

Table 2

List of Skills Included in Clinical Skills Rubrics Package

History Taking	Visual Acuity	Pinhole Visual Acuity
Near Point of Accommodation	Near Point of Convergence	Amsler Grid
Confrontation Visual Fields	Automated Visual Fields	Pupil Assessment
Applanation Tonometry	Keratometry	Lensometry
Retinoscopy	Refinement	Versions and Ductions
Ocular Motility	Ultrasound Immersion Biometry	Potential Acuity Meter
Slit Lamp Biomicroscopy	Ishihara Color Test	Ultrasound Pachymetry
Patching	Optical Coherence Tomography	

Each skill was broken down into several small steps. Each step was written as an actionable part of the overall skill. For example, in the skill for slit lamp biomicroscopy, the steps include “Instruct the patient,” “Turn on the slit lamp,” “Adjust room lights,” “Position patient,” “Lighting techniques,” and “Record results.”

For each step, a statement describing four levels of competency was written. Each statement was an unambiguous description of one of the four levels: Novice, Beginner, Intermediate, and Competent. An example was under “Beginner”: “Incorrectly instructs patient.” Once completed, the rubric included a matrix with the steps to perform in the left column and the description statements completing each row of each step. The slit lamp biomicroscopy example is shown in

Figure 1.

Figure 1

Example of Clinical Skills Rubric developed for this study

SLIT LAMP BIOMICROSCOPY

Measure and record slit lamp examination.

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
PREPARE EQUIPMENT	Turn on slit lamp.	Does not turn on slit lamp.		Requires guidance to turn on slit lamp.	Turns on slit lamp.
	Adjust room lights.	Does not adjust room lights.	Incorrectly adjusts room lights.	Requires guidance to adjust room lights.	Correctly adjusts room lights.
PERFORM EXAM	Position patient.	Does not position patient.	Incorrectly positions patient.	Requires guidance to position patient.	Correctly positions patient.
	Lighting techniques.	Does not use different lighting techniques as appropriate.	Incorrectly uses lighting techniques.	Requires guidance to use different lighting techniques.	Correctly uses different lighting techniques.
RECORD RESULTS	Record results.	Does not record findings.	Incorrectly records findings.	Requires guidance to record findings.	Correctly records findings.

The Clinical Skills Rubrics Package, distributed to the exam candidates, combined all 23 skills rubrics into one document, which is included in Appendix 1.

Phase 2: Clinical Skills Rubric Validation

The clinical skills rubrics were provided to the program directors of three accredited ophthalmic training programs in Canada for feedback. The programs were in Yellowknife, NT; Kingston, ON; and Ottawa, ON. The program directors were provided with the rubrics package and asked to review and critique them while assessing their students for the following:

1. Steps. Were the steps complete and in the correct order?

2. Validity. Are the rubrics valid? Do they represent current clinical practice?
3. Usability. Were the rubrics easy to use and helpful in an educational setting?

The aggregate feedback from the three program directors was that the rubrics were validated as appropriate, functional, and meaningful. Minor adjustments were made to clarify the language and the steps.

Phase 3: Power Calculation and Data Collection

Power Calculation

A power calculation was performed with G*Power using the following parameters: the difference between two independent means (two groups); two tails; effect size =0.2; alpha err problem = 0.05; power = 0.8; allocation ratio n2/n1 = 1.

Using the above parameter, the sample size of the treatment group was 394, and the control group was 394 for a total of 788 exam candidates.

Data Collection

There was no recruitment of participants for this study. Instead, the participants were all adult candidates applying for IJCAHPO's Certified Ophthalmic Assistant examination from Canada and the United States through the third eligibility pathway of on-the-job training. IJCAHPO provided anonymous examination scores of participants who completed the Certified Ophthalmic Assistant examination after using the rubrics in 2023 and anonymous exam scores from participants from 2022 who did not use the clinical skills rubrics.

Data collected was in two distinct groups: the treatment group, or the 2023 exam takers who used the clinical skills rubrics to prepare, and the control group, or exam takers from 2022 who did not use the clinical skills rubrics to prepare. As per the eligibility criteria, on-the-job trained applicants had to be employed by an ophthalmologist and have 1000 hours of supervised

work experience (International Joint Commission on Allied Health Personnel in Ophthalmology [IJCAHPO], 2019-a). Typically, people start working and learning before deciding to pursue certification. At this time, they would have begun studying before applying for the exam. Once their application for the exam was accepted, they received the clinical skills rubrics package for use while preparing. The candidates' time to use the rubrics varied depending on when they booked their exam.

The Examination

Two versions of the Certified Ophthalmic Assistant examination were used. First-time exam takers were randomly assigned to one of the exams. Each exam was developed based on the published content areas determined from the job task analysis. Although the exams contained different questions and passing scores, they were psychometrically equilibrated. The passing scores were not published; however, they ensure that the two examination versions are equivalent. This allowed the use of aggregate scores across both exams.

Variables

The independent variable in this study was the rubrics provided to the exam candidates. Each candidate received the clinical skills rubrics package used for training and assessment and instructions on how to use the rubrics. The dependent variables were the mean score and pass rate on the Certified Ophthalmic Assistant examination.

Sources of Data

The population was the total number of candidates who met the inclusion criteria and completed the certified ophthalmic assistant examination within the timing of the data collection period. All candidates within the enrollment period of the study were provided with the clinical

skills rubrics package when their application was accepted. As part of their application, all exam candidates signed a statement allowing their data to be used for research.

Data Analysis

A mean score and pass rate were calculated for the treatment group and the control group from the individual scores. The mean score was calculated using SPSS software. The pass rate was computed using P = (# passed / # took the exam) x 100. The control group's aggregate mean score and pass rate were compared to the treatment group using SPSS software to determine if a correlation exists using inferential statistics. Also, the raw scores from both groups were plotted on a histogram and analyzed for skew using SPSS software.

Ethical Considerations

Ethical issues included confidentiality, consent to participate, and the concept of do no harm. All ethical considerations were considered during this study. The confidentiality of the data of all participants was of the utmost importance, and it was assured by having no contact with any control or treatment group participants and seeing only anonymized data. All examination candidates signed a form stating that their anonymized data may be used for research purposes.

All participants were on-the-job trained candidates for the Certified Ophthalmic Assistant examination offered by the International Joint Commission on Allied Health in Ophthalmology. Once they were accepted for the examination, an IJCAHPO certification staff member collected their raw data unrelated to this study. The staff person collected data according to specific guidelines. For example, the control group came from examination takers between July and August 2022, and the treatment group was the first 397 examination takers between July and September 2023.

The Pearson Vue examination center provided a dashboard for downloading examination scores and pass or fail status. The IJCAHPO staff person downloaded the data based on the parameters and removed all information that could identify an exam taker. The only data I saw were 6-digit identification numbers, each candidate's total score, and each candidate's pass or fail status.

I obtained approval from IJCAHPO to collect anonymized data for this study and REB approval from Athabasca University, as the risk of identifying examination takers and the chance of harm were very low.

Summary

I developed 16 clinical skills rubrics and combined them with seven previously developed rubrics, which program directors of ophthalmic assistant programs subsequently validated to ensure their accuracy and relevance. These rubrics were then distributed to candidates preparing for the Certified Ophthalmic Assistant (COA) examination, with the scores and pass/fail statuses of these candidates collected prospectively to form the treatment group. For comparison, control group data was gathered from historical examination records of candidates who took the exam before introducing the rubrics.

Chapter 4. Results and Analysis

Introduction

A Chi-square test and an independent samples t-test were performed to test the hypothesis that the mean score and the pass rate of on-the-job trained candidates were affected by providing exam candidates with clinical skills rubrics to prepare for the certified ophthalmic assistant exam offered by the International Joint Commission of Allied Health Personnel in Ophthalmology. The comparison between the group that used the clinical skills rubrics and the group that did not set to answer the question. The null hypothesis was that there would be no difference in the mean score and the pass rate between the groups.

Treatment and Control Groups

The treatment group which used the rubrics included 397 exam takers. The mean score was 145.2821, with a standard deviation of 17.47917 and a standard error mean of .877725. The control group, which did not use the rubrics, included 406 exam takers, with a mean score of 146.5271, a standard deviation of 18.25709, and a standard error mean of .90608. The Pass rate was calculated for the treatment and control groups. The pass rate for the treatment group was 86.15%, based on 342 people passing, and the control group had a pass rate of 87.19%, based on 354 people passing.

Chi-Square Test

A Chi-square test of independence was performed to test the relationship between the control and treatment groups on their pass or fail status on the COA examination. The relationship between variables was not significant, X^2 (1, N= 803) = .190, p = .663. The number of people who failed in the control group was lower than expected. The number of people who passed in the control group was higher than expected. The number of people who failed in the

treatment group was higher than expected. The number of people who passed in the treatment group was lower than expected. Therefore, the null hypothesis could not be rejected.

Table 2

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Group * Result	803	100.0%	0	0.0%	803	100.0%

Table 3

Group * Result Crosstabulation

			Result		
			Fail	Pass	Total
Group	Control	Count	52	354	406
		Expected Count	54.1	351.9	406.0
	Treatment	Count	55	342	397
		Expected Count	52.9	344.1	397.0
Total		Count	107	696	803
		Expected Count	107.0	696.0	803.0

Table 4

Chi-Squared Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.190[a]	1	.663		
Continuity Correction [b]	.110	1	.740		
Likelihood Ratio	.190	1	.663		
Fisher's Exact Test				.679	.370
N of Valid Cases	803				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 52.90.

b. Computed only for a 2x2 table

Table 5

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	-.015	.663
	Cramer's V	.015	.663
N of Valid Cases		803	

Independent Samples Test

An independent samples t-test was performed. Levene's test was performed to test the homogeneity across the treatment and control groups. It had an F value of .761 and a significance of .383. Since the significance was greater than .05, the null hypothesis was maintained as there was no difference between the variances.

The t-statistic value was -.987, the degrees of freedom (df) was 800.644, and the significance value (p-value) was .162, as outlined in Table . The one-sided p-value was .162, and the two-sided p-value was .324.

Table 6

Levene's Test for Equality of Variances

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-sided p	Two-sided p	Mean difference	Std. Error Difference	Lower	Upper
Score	Equal Variances assumed	.761	.383	-.987	801	.162	.324	-1.24498	1.26179	-3.72179	1.23183
	Equal variances are not assumed.			-.987	800.644	.162	.324	-1.24498	1.26118	-3.72058	1.23062

Independent Samples Effect Sizes

The independent sample effect size was calculated using Cohen's d, Hedges' correction, and Glass's delta. All three values in Table indicated a small effect size.

Table 7

Independent Sample Effect Size

				95% Confidence Interval	
		Standardized [a]	Point Estimate	Lower	Upper
Score	Cohen's d	17.87673	-.070	-.208	.069
	Hedges' Correction	17.89349	-.070	-.208	.069
	Glass's delta	18.25709	-.068	-.207	.070

c. The denominator used in estimating the effect sizes.
Cohen's uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation plus a correction factor.
Glass's delta uses the sample standard deviation of the control (i.e., the second) group.
Skew and Kurtosis

The examination scores for both treatment and control groups were plotted on a histogram, and skewness and kurtosis were calculated. The rubrics group had a skewness score of -.608 and a kurtosis of .766. The no-rubrics group had a skewness score of -.671 and a kurtosis of .420, as outlined in

The treatment group labelled "Rubrics" and the control group labelled "No Rubrics" were analyzed for skewness and kurtosis as outlined in Table 8. The mean score was plotted on histograms in Figure 2.

Table and Figure 2. Both groups express moderate negative skewness, indicating a more significant number of larger values. The skewness of both groups suggests a symmetrical distribution. The kurtosis is moderately positive in both groups but suggests the rubric group has a higher peak than the no-rubric group. The skewness and kurtosis both suggest a normal distribution.

Frequencies

The treatment group labelled “Rubrics” and the control group labelled “No Rubrics” were analyzed for skewness and kurtosis as outlined in Table 8. The mean score was plotted on histograms in Figure 2.

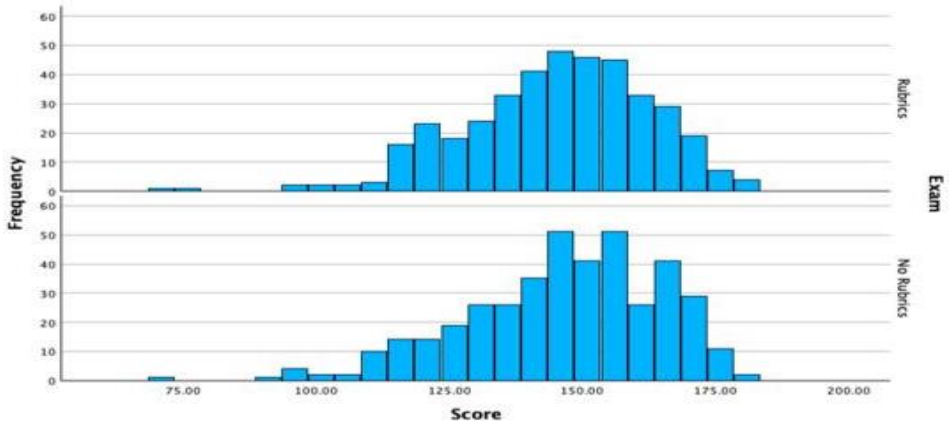
Table 8

Statistics

Score			
Rubrics	N	Valid	397
		Missing	0
	Skewness		-.608
	Std. Error of Skewness		.122
	Kurtosis		.766
	Std. Error of Kurtosis		.244
No Rubrics	N	Valid	406
		Missing	0
	Skewness		-.671
	Std. Error of Skewness		.121
	Kurtosis		.420
	Std. Error of Kurtosis		.242

Figure 2

Histogram of Mean Score



Conclusion

The statistical analysis of the data illustrated no difference between means and a normal distribution of both groups. The null hypothesis could not be rejected.

Chapter 5. Discussion and Summary

Introduction

In my study, I aimed to investigate the impact of clinical skills rubrics on the performance of candidates taking the Certified Ophthalmic Assistant (COA) exam. Ophthalmic assistants play a vital role in ophthalmic care, working as part of a broader eye care team led by ophthalmologists. They operate in various clinical settings, performing essential tasks such as patient workups and diagnostic tests and assisting ophthalmologists in delivering high-quality care. Certification indicates that candidates have met a minimum standard of knowledge and skill.

Drawing on constructivist learning theory, I hypothesized that there would be no effect on the mean score or pass rate between exam candidates who were provided with clinical skills rubrics and those who were not. My research question was: Does providing ophthalmic clinical skills rubrics during preparation for the certified ophthalmic assistant exam, offered by the International Joint Commission of Allied Health Personnel in Ophthalmology (IJCAHPO), influence the mean score and pass rate of on-the-job trained candidates? I proposed that rubrics could enhance candidates' performance by reinforcing their skills through experiential learning, potentially leading to a higher pass rate. This, in turn, could increase the number of certified ophthalmic assistants in the workforce, ultimately improving productivity and the quality of eye care compared to non-certified personnel.

Ophthalmic assistants, mainly those trained on the job, acquire knowledge through hands-on experience. The rubrics were designed to provide a standardized approach to mastering clinical skills consistent with constructivist theory. My study aimed to determine whether introducing these rubrics could affect examination scores and pass rates as a secondary outcome.

Research has shown that certified ophthalmic assistants are more productive than their uncertified counterparts (Astle et al., 2011; Woodworth et al., 2008), highlighting the importance of increasing the number of certified assistants in the workplace. Therefore, my central research question focused on whether providing ophthalmic clinical skills rubrics during exam preparation could affect the mean score and pass rate specifically of on-the-job trained candidates.

Summary of Findings

In this study, I developed and provided on-the-job trained ophthalmic assistants with a standardized tool to enhance their acquisition of essential clinical skills. Grounded in constructivist learning theory, my objective was to facilitate skill improvement and, in turn, increase their knowledge. I hypothesized this approach would not impact the certification examination's mean scores and pass rates.

I conducted a quantitative correlational study comparing the mean scores and pass rates of on-the-job trained candidates for the ophthalmic assistant certification exam. This comparison focused on candidates who were provided with clinical skills rubrics during their preparation and those who were not.

The rubrics were developed based on the framework by Dreyfus and Dreyfus (1980) and modelled after the International Congress of Ophthalmology's (ICO) Ophthalmic Clinical Evaluation Exercise to maintain the validity and standards set by the ICO for assessing ophthalmology residents' skills. The tasks included in these rubrics were based on IJCAHPO's published Core Criteria Handbook for Certification and Recertification (International Joint Commission on Allied Health Personnel in Ophthalmology, 2019-a), with steps defined by subject matter experts from IJCAHPO's certification committee. IJCAHPO had already

developed nine rubrics before this study, and I maintained the content, making only formatting changes for consistency. I developed an additional fourteen rubrics using the same format. Each rubric was validated by subject matter experts, resulting in 23 skills included in the final rubrics package.

The study involved a large sample, with 397 candidates in the treatment group (from 2023) and 406 in the control group from 2022. I performed a statistical comparison to assess whether the introduction of clinical skills rubrics influenced the mean scores and pass rates. I used a chi-square and independent samples t-test to analyze the data.

The null hypothesis was that there would be no effect on the mean scores and pass rates between candidates who were provided with clinical skills rubrics and those who were not. Based on the chi-square test, independent samples t-test, and Levene's test for equality of variances, I found that the null hypothesis could not be rejected. This suggests that any differences in mean scores and pass rates were due to random chance or sampling error rather than the intervention of the rubrics. Given the anonymous nature of the data and my inability to track rubric usage, it is possible that the impact of the rubrics was not fully captured.

Discussion

Although my study did not confirm the effectiveness of clinical skills rubrics in improving exam performance, it raised important questions about how best to prepare candidates for certification. The findings revealed no difference in exam scores or pass rates between candidates who were provided with rubrics and those who were not. This suggests the rubrics had a neutral impact on performance, meaning they neither enhanced nor hindered the candidates' success. However, despite this result, the study offers valuable insights for refining

future training strategies and lays the groundwork for further research on the role of rubrics in ophthalmic skill development.

A fundamental limitation of this study was that I could not determine how many exam candidates used the rubrics. While 397 candidates were provided with rubrics, the data I worked with was anonymous, meaning I could not know whether these individuals used the rubrics during their preparation. This limitation stemmed from the fact that I used secondary data, which had already been collected and did not allow for follow-up surveys or additional data collection. I needed direct access to the participants or resources available to further inquire about their experiences with the rubrics.

Given these constraints, the study's results, which did not reject the null hypothesis, suggest a neutral effect of the rubrics. There was no significant change in the mean scores or pass rates, indicating that the use of rubrics did not have a measurable positive or negative impact on the performance of on-the-job trained exam candidates. While this outcome may not have immediate practical implications, it indicates the need for further investigation.

The rubrics were designed to provide a vetted and standardized approach to skill development, which aligns with constructivist learning theory by allowing learners to build their knowledge through experiential learning. While my findings did not demonstrate an effect on performance, this study highlights the importance of taking additional steps, such as gathering direct feedback from candidates, to assess the value of rubrics in certification preparation fully.

Suggestions for Future Research

In this quantitative correlational study, I compared the mean scores and pass rates of the control and treatment groups. While this approach made the project manageable, it only partially

explored the study's potential impact. Based on my findings, I offer the following recommendations for further research.

The first recommendation is to conduct a mixed methods study that includes a survey of candidates provided with the clinical skills rubrics. This survey would allow for identifying candidates who used the rubrics. Since my study relied on anonymous data, I could not gather this information directly. A survey would confirm how many used the rubrics and capture candidates' perceptions of usefulness. It could explore whether candidates felt the rubrics helped with their studying, which aspects were most beneficial, and if any missing skills should have been included.

The second recommendation is to break down the scores by individual content areas of the certification exam rather than focusing solely on the overall mean score and pass rate. The exam covers 23 distinct content areas, including didactic and skills-based sections. By analyzing the scores of these individual areas, it may be possible to determine whether the skill-based content was explicitly influenced by rubrics, even if the overall mean score was not. Such an analysis could also highlight gaps in the clinical skills rubrics, revealing areas needing further coverage or improvement.

The third recommendation is to simultaneously conduct the study with the control and treatment groups. In my study, there was a one-year difference in the data collection periods for the two groups, which may have introduced variables that I could not control. Factors such as proximity to the COVID-19 pandemic, potential burnout, or other changes in external circumstances could have influenced exam performance. Running the study concurrently for both groups would help control for these external factors.

Finally, I recommend conducting a study in which candidates use the rubrics in preparation for the exam and during their training period. This would allow for a deeper understanding of how the rubrics impact learning and skill development over time rather than just examining their effectiveness as a study tool for the certification exam.

Conclusion

My study explored the effect of clinical skills rubrics on the performance of on-the-job trained ophthalmic assistants taking the Certified Ophthalmic Assistant (COA) exam. I aimed to determine whether providing these rubrics during exam preparation would influence mean scores and pass rates. Grounded in constructivist learning theory, the rubrics were intended to standardize and enhance the acquisition of clinical skills. I theorized that they would perform better on the certification examination by improving their clinical skills and learning from the experience. Better performance on the examination would see more candidates passing, and therefore, more certified ophthalmic assistants would be in the workplace, and productivity would be higher.

As part of the ophthalmologist-led eye care team, ophthalmic assistants are crucial in providing ophthalmic services. Working under the direction of an ophthalmologist, a medical doctor, and a surgeon in various settings such as private practice, university eye clinics, and hospital eye clinics (IJCAHPO, 2018), their contributions are instrumental in delivering quality eye care.

The scope of practice for ophthalmic assistants in North America includes a preliminary workup before the patient sees the ophthalmologist, including visual acuity testing, intraocular pressure measurement, refraction, colour vision testing, pupil assessment, and many other ancillary tests performed as part of a patient workup (IJCAHPO, 2018). Ophthalmic assistants

also perform diagnostic testing, typically performed as adjunctive testing, to support the patient's visit with the ophthalmologist. Such testing would include visual field testing, imaging the anterior and posterior segments of the eye, ultrasound, and others.

The International Joint Commission on Allied Health Personnel in Ophthalmology is the certifying body for ophthalmic assistants. On-the-job trained ophthalmic assistants make up most of the candidates for the Certified Ophthalmic Assistant exam and utilize the appropriate eligibility pathway, which includes 1000 hours of work experience under the supervision of an ophthalmologist (IJCAHPO, 2019-a).

The constructivist theory of learning is based on the premise that knowledge is developed based on experience (Cobb & Bowers, 1999). Constructivist theory sees acquiring and refining knowledge and skills from situational experience. The rubrics provided learners in the treatment group with the proper steps of the ophthalmic skills that may not have been available otherwise and a standardized way to perform these ophthalmic skills. These vetted assessment tools allowed them to improve their skills and build their ophthalmic knowledge through experiential learning.

Studies show that certified ophthalmic assistants are more productive than their uncertified counterparts (Astle et al., 2011; Woodworth et al., 2008), suggesting a need to increase the number of certified ophthalmic assistants in the workplace. This study's significance was to provide on-the-job trained ophthalmic assistants with a tool for learning standardized steps for essential skills. Through constructivism, the learners would increase their skills and, therefore, their knowledge, and the mean score and pass rate on the certification exam would increase.

The clinical skills rubrics were developed following the framework outlined by Dreyfus and Dreyfus (1980) and aligned with the International Congress of Ophthalmology's (ICO) Ophthalmic Clinical Evaluation Exercise to uphold the ICO's standards for assessing ophthalmology residents' skills. Before this study, IJCAHPO had created nine rubrics, which were only reformatted for consistency in appearance. I developed fourteen additional rubrics in the same format and content areas, resulting in a comprehensive package of 23 validated rubrics.

The study involved many participants, with the treatment and control groups comprising 397 and 406 exam takers, respectively. A chi-square test and an independent samples t-test were conducted to analyze whether the clinical skills rubrics used during the study impacted the mean score and pass rate. The null hypothesis stated that there would be no difference between the mean score and pass rate of examination candidates who used the clinical skills rubrics and those who did not.

The data collected in this study were the mean score and pass rates between the archived scores from 2022 and new test-takers in 2023, with a statistical comparison to determine if the intervention of ophthalmic skills rubrics influenced the mean score or the pass rate. The chi-square test, independent samples test, and Levene's indicated that the null hypothesis could not be rejected, meaning that any differences in the means and pass rates were due to random chance or sampling error.

A major limitation of this study was the inability to determine how many used the rubrics, as the data was anonymous and did not allow for follow-up or direct feedback from participants. This restricted my ability to assess whether and how the rubrics were utilized, which may have influenced the outcomes. While the rubrics were designed to enhance learning through

experiential, skill-based practice, the neutral findings suggest that the full potential of the rubrics might not have been captured due to these data constraints.

Despite the lack of significant results, this study raises important questions about how to better prepare candidates for certification. Future research could benefit from a mixed methods approach that includes surveys to determine rubric usage and gather qualitative feedback from candidates on their perceptions and effectiveness. Additionally, analyzing specific content areas within the exam and conducting the study over a uniform time frame for both control and treatment groups would provide deeper insights into the impact of rubrics on skill development.

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Appendix A: Clinical Skills Rubrics

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
HISTORY TAKING

Record an ophthalmic history.

INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
GREETING	Introduction.	Does not perform introductions.	Incorrectly performs introductions.	Requires guidance to perform introductions.	Correctly performs introductions.
	Confirm the patient.	Does not confirm the patient.	Incorrectly confirms the patient.	Requires guidance to confirm the patient.	Confirms the patient.
	Gain consent.	Does not gain consent.		Requires guidance to gain consent.	Gains consent.
CHIEF COMPLAINT	Elicit the main reason for the visit.	Does not elicit the main reason for the visit.	Incorrectly elicits the main reason for the visit.	Requires guidance to elicit the main reason for the visit.	Elicits main reason for the visit.
HISTORY OF PRESENT ILLNESS	Elicit details of present illness.	Does not elicit details of present illness.	Incorrectly elicits details of present illness.	Requires guidance to elicit details of present illness.	Elicits details of present illness.
REVIEW OF SYSTEMS	Review systems.	Does not review systems.	Incorrectly reviews systems.	Requires guidance to Review systems.	Correctly reviews systems.
SOCIAL AND VOCATIONAL HISTORY	Elicit social and vocational details.	Does not elicit social and vocational details.	Incorrectly elicits social and vocational details.	Requires guidance to elicit social and vocational details.	Elicits social and vocational details.
PAST OCULAR HISTORY	Elicit past ocular details.	Does not elicit past ocular details.	Incorrectly elicits past ocular details.	Requires guidance to elicit past ocular details.	Elicits past ocular details.
PAST MEDICAL HISTORY	Elicit medical details.	Does not elicit medical details.	Incorrectly elicits medical details.	Requires guidance to elicit medical details.	Elicits medical details.
OCULAR MEDICATIONS	Elicit medications.	Does not elicit medications.	Incorrectly elicits medications.	Requires guidance to elicit medications.	Elicits medications.
ALLERGIES	Elicit allergies.	Does not elicit allergies.	Incorrectly elicits allergies.	Requires guidance to elicit allergies.	Elicits allergies.
FAMILY HISTORY	Elicit family details.	Does not elicit family details.	Incorrectly elicits family details.	Requires guidance to elicit family details.	Elicits family details.
RECORD HISTORY	Record all steps of the history-taking exam.	Does not record all steps of the history-taking exam.	Incorrectly records all steps of the history-taking exam.	Requires guidance to record all steps of the history-taking exam.	Correctly records all steps of the history-taking exam.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

VISUAL ACUITY

Measure and record distance visual acuity with Snellen chart.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patients.	Correctly instructs patient.
POSITION PATIENT	Position the patient in the chair.	Does not position the patient in the chair.	Incorrectly positions the patient in the chair.	Requires guidance to position the patient in the chair.	Correctly positions the patient in the chair.
	Direct patient to occlude one eye.	Does not direct the patient to occlude one eye.		Requires guidance to direct the patient to occlude one eye.	Correctly directs the patient to occlude one eye.
TEST VISION	Observe the patient throughout the test.	Does not observe the patient throughout the test.		Requires guidance to observe the patient throughout the test.	Observe the patient throughout the test.
	Direct the patient to read the chart starting at an appropriate line.	Does not direct the patient to read the chart starting at an appropriate line.	Directs patient to read the chart starting at an inappropriate line.	Requires guidance to direct the patient to read the chart starting at an appropriate line.	Directs patient to read the chart starting at an appropriate line.
	Encourage the patient to guess as required.	Does not encourage the patient to guess as required.	Incorrectly encourages the patient to guess as required.	Requires guidance to encourage the patient to guess as required.	Encourages patient to guess as required.
RECORD VISION	Record vision as a fraction.	Does not record vision as a fraction.	Incorrectly records vision as a fraction.	Requires guidance to record vision as a fraction.	Records vision as a fraction.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

PINHOLE VISUAL ACUITY

Measure and record pinhole visual acuity.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Recognize the need for pinhole acuity.	Does not recognize the need for pinhole acuity.		Requires guidance to recognize the need for pinhole acuity.	Recognizes the need for pinhole acuity.
	Instruct Patient	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
POSITION PINHOLE OCCLUDER	Position the pinhole occluder.	Does not position the pinhole occluder.	Incorrectly positions the pinhole occluder.	Requires guidance to position the pinhole occluder.	Correctly positions the pinhole occluder.
TEST VISION	Direct the patient to read the lowest line possible.	Does not direct the patient to read the lowest line possible.	Incorrectly directs the patient to read the lowest line possible.	Requires guidance to direct the patient to read the lowest line possible.	Directs patient to read the lowest line possible.
RECORD VISION	Record vision as a fraction.	Does not record vision as a fraction.	Incorrectly records vision as a fraction.	Requires guidance to record vision as a fraction.	Correctly records vision as a fraction.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
NEAR POINT OF ACCOMMODATION

Measure and record near point of accommodation (NPA).

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
PREPARE PATIENT	Use the patient's distance correction.	Does not use patient's distance correction.		Requires guidance to use patient's distance correction.	Uses patient's distance correction.
	Place an accommodative rule against the forehead or pull the Prince Rule down on the phoropter.	Does not place an accommodative rule against the forehead or pulls the Prince Rule down on the phoropter.	Incorrectly places an accommodative rule against the forehead or pulls the Prince Rule down on the phoropter.	Requires guidance to place an accommodative rule against the forehead or pull the Prince Rule down on the phoropter.	Places an accommodative rule against the forehead or pull the Prince Rule down on the phoropter.
	Select an appropriately sized accommodative target.	Does not select an accommodative target.	Selects an inappropriate target.	Requires guidance to select appropriately sized accommodative targets.	Selects an appropriately sized accommodative target.
MEASURE	Direct the patient to focus on the target and slowly move toward the eye.	Does not direct patient to focus on the target and slowly move towards eye.	Incorrectly directs patient to focus on the target and slowly move towards eye.	Requires guidance to direct patient to focus on the target and slowly move towards eye.	Directs patient to focus on the target and slowly move towards eye.
	Use a +3.00 lens as appropriate for presbyopes.	Does not use a +3.00 lens as appropriate for presbyopes.	Uses an incorrect lens for presbyopes.	Requires guidance to use a +3.00 lens as appropriate for presbyopes.	Uses a +3.00 lens as appropriate for presbyopes.
	Direct patient to report when the print blurs.	Does not direct patient to report when the print blurs.		Requires guidance to directs patient to report when the print blurs.	Directs patient to report when the print blurs.
RECORD	Record distance.	Does not record distance.	Incorrectly records distance.	Requires guidance to record distance.	Correctly records distance.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

NEAR POINT OF CONVERGENCE

Measure and record near point of convergence.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
PREPARE PATIENT	Place an accommodative rule against the forehead.	Does not place an accommodative rule against the forehead.	Incorrectly places an accommodative rule against the forehead.	Requires guidance to place an accommodative rule against the forehead.	Places an accommodative rule against the forehead.
	Select an appropriate accommodative target.	Does not select an accommodative target.	Selects an inappropriate target.	Requires guidance to select an appropriate accommodative target.	Selects an appropriate accommodative target.
MEASURE DIPLOPIA POINT	Direct patient to focus on the target.	Does not direct patient to focus on the target.	Directs patient to focus on an inappropriate target.	Requires guidance to direct patient to focus on the target.	Directs patient to focus on the target.
	Slowly move target towards eye.	Does not move target towards eye.	Moves target too quickly towards eye.	Requires guidance to slowly move target towards eye.	Slowly moves target towards eye.
	Direct patient to report when the object is double or if one eye turns outwards.	Does not direct patient to report when the object is double or if one eye turns outwards.		Requires guidance to direct patient to report when the object is double or if one eye turns outwards.	Directs patient to report when the object is double or if one eye turns outwards.
RECORD	Measure and record distance.	Does not measure and record distance.	Incorrectly measures and records distance.	Requires guidance to measure and record distance.	Measures and records distance.
MEASURE RECOVERY POINT	Move target slowly away from the eye.	Does not move target away from the eye.	Moves target too quickly away from eye.	Requires guidance to move target slowly away from the eye.	Moves target slowly away from the eye.
	Direct patient to report when object turns single.	Does not direct patient to report when object turns single.	Incorrectly directs patient to report when object turns single.	Requires guidance to direct patient to report when object turns single.	Directs patient to report when object turns single.
RECORD	Measure and record distance.	Does not measure and record distance.	Incorrectly measures and records distance.	Requires guidance to measure and record distance.	Correctly measures and records distance.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

AMSLER GRID

Measure and record Amsler Grid.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
PREPARE PATIENT	Instruct patient to wear reading glasses.	Does not instruct patient to wear reading glasses.		Requires guidance to instruct patient to wear reading glasses.	Instructs patient to wear reading glasses.
	Instruct patient to hold the grid at 18 inches (40 cm).	Does not instruct patient to hold the grid at 18 inches (40 cm).		Requires guidance to instruct patient to hold the grid at 18 inches (40 cm).	Instructs patient to hold the grid at 18 inches (40 cm).
	Provide good illumination on the grid.	Does not provide illumination on the grid.	Provides poor illumination on the grid.	Requires guidance to provide good illumination on the grid.	Provides good illumination on the grid.
PERFORM TEST	Instruct patient to occlude one eye.	Does not instruct patient to occlude one eye.	Incorrectly instructs patient to occlude one eye.	Requires guidance to instruct patient to occlude one eye.	Instructs patient to occlude one eye.
	Ask the patient if they can see the central dot.	Does not ask the patient if they can see the central dot.		Requires guidance to asks the patient if they can see the central dot.	Asks the patient if they can see the central dot.
	Direct the patient to fixate on the central dot and ask, “Can you see all four corners simultaneously?”	Directs the patient to fixate on the central dot and asks, “Can you see all four corners simultaneously?”	Incorrectly directs the patient to fixate on the central dot and asks, “Can you see all four corners simultaneously?”	Requires guidance to direct the patient to fixate on the central dot and asks, “Can you see all four corners simultaneously?”	Directs the patient to fixate on the central dot and asks, “Can you see all four corners simultaneously?”
	Direct the patient to fixate on the central dot and ask, “Are all the lines straight and parallel?”	Does not ask: “Are all the lines straight and parallel?”	Incorrectly asks: “Are all the lines straight and parallel?”	Requires guidance to ask: “Are all the lines straight and parallel?”	Asks: “Are all the lines straight and parallel?”
	Direct the patient to fixate on the central dot and ask, “Are there any parts of the grid missing, is it complete?”	Does not ask: “Are there any parts of the grid missing, is it complete?”	Incorrectly asks: “Are there any parts of the grid missing, is it complete?”	Requires guidance to ask: “Are there any parts of the grid missing, is it complete?”	Asks: “Are there any parts of the grid missing, is it complete?”
RECORD	Record Amsler grid results.	Does not record Amsler grid results.	Incorrectly records Amsler gird results.	Requires guidance to record Amsler grid results.	Correctly records Amsler grid results.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
CONFRONTATION VISUAL FIELDS

Measure and record confrontation visual fields.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
POSITION PATIENT	Position patient to sit directly across from examiner at 2 feet.	Does not position patient to sit directly across from examiner at 2 feet.		Requires guidance to position patient to sit directly across from examiner at 2 feet.	Positions patient to sit directly across from examiner at 2 feet.
	Direct patient to occlude one eye while examiner occludes the opposite eye.	Does not direct patient to occlude one eye while examiner occludes the opposite eye.		Requires guidance to direct patient to occlude one eye while examiner occludes the opposite eye.	Directs patient to occlude one eye while examiner occludes the opposite eye.
	Direct patient to fixate on examiners open eye with their open eye.	Does not direct patient to fixate on examiners open eye with their open eye.		Requires guidance to direct patient to fixate on examiners open eye with their open eye.	Directs patient to fixate on examiners open eye with their open eye.
PERFORM TEST	Select appropriate target (fingers, red cap, etc.)	Does not select appropriate target.	Selects inappropriate target.	Requires guidance to select appropriate target.	Selects appropriate target.
	Present target in all quadrants.	Does not present target in all quadrants.		Requires guidance to present target in all quadrants.	Presents target in all quadrants.
	Present target halfway between patient and examiner.	Does not present target halfway between patient and examiner.		Requires guidance to present target halfway between patient and examiner.	Presents target halfway between patient and examiner.
	Monitor patient fixation.	Does not monitor patient fixation.		Requires guidance to monitor patient fixation.	Monitors patient fixation.
RECORD RESULTS	Record confrontation field results.	Does not record confrontation field results.	Incorrectly records confrontation field results.	Requires guidance to record confrontation field results.	Correctly records confrontation field results.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

AUTOMATED VISUAL FIELDS

Perform automated visual field test.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
SET UP	Set up machine.	Does not set up machine.	Incorrectly sets up machine.	Requires guidance to set up machine.	Correctly sets up machine.
INSTRUCT PATIENT	Instruct patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
PREPARE PATIENT	Position eye patch.	Does not position eye patch.	Incorrectly positions eye patch.	Requires guidance to position eye patch.	Positions eye patch.
	Position patient.	Does not position patient.	Incorrectly positions patient.	Requires guidance to position patient.	Correctly positions patient.
PREPARE EXAM	Program the machine.	Does not program the machine.	Incorrectly programs the machine.	Requires guidance to program the machine.	Correctly programs the machine.
	Select lenses.	Does not select lenses.	Incorrectly selects lenses.	Requires guidance to select lenses.	Selects the correct lens.
	Position lenses.	Does not position lenses.	Incorrectly positions lenses.	Requires guidance to position lenses.	Correctly positions the lenses.
ADMINISTER EXAM	Center eye image.	Does not center the eye image.	Incorrectly centers the eye image.	Requires guidance to center the eye image.	Centers the eye image.
	Start test.	Does not start test.	Incorrectly starts test.	Requires guidance to start test.	Starts the test.
	Monitor patient's fixation.	Does not monitor patient's fixation.	Incorrectly monitors patient's fixation.	Requires guidance to monitor patient's fixation.	Correctly monitors patient's fixation.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

PUPIL ASSESSMENT

Measure, compare, and evaluate pupil function at a distance.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
PREPARE EXAM	Instruct patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
	Adjust room lights.	Does not adjust room lights.	Incorrectly adjusts room lights.	Requires guidance to adjust room lights.	Correctly adjust room lights.
CHECK PUPILS	Record the shape of the pupils.	Does not record the shape of the pupils.	Incorrectly records the shape of pupils.	Requires guidance to record the shape of pupils.	Correctly records the shape of pupils
	Measure each pupil.	Does not measure each pupil.	Incorrectly measures each pupil.	Requires guidance to measure each pupil.	Correctly measures each pupil.
CHECK PUPIL RESPONSE	Check for direct response in both pupils by shining the light in one eye and observing the same eye.	Does not check for direct response in both pupils by shining the light in one eye and observing the same eye.	Incorrectly checks for direct response in both pupils by shining the light in one eye and observing the same eye.	Requires guidance to check for direct response in both pupils by shining the light in one eye and observing the same eye.	Checks for direct response in both pupils by shining the light in one eye and observing the same eye.
	Check for consensual response in both pupils by shining light in one eye and observing the fellow eye.	Does not check for consensual response in both pupils by shining light in one eye and observing the fellow eye.	Incorrectly checks for consensual response in both pupils by shining light in one eye and observing the fellow eye.	Requires guidance to check for consensual response in both pupils by shining light in one eye and observing the fellow eye.	Checks for consensual response in both pupils by shining light in one eye and observing the fellow eye.
	Check for relative afferent pupillary defect (RAPD) using the swinging flashlight test.	Does not check for relative afferent pupillary defect (RAPD) using the swinging flashlight test.	Incorrectly checks for relative afferent pupillary defect (RAPD) using the swinging flashlight test.	Requires guidance to check for relative afferent pupillary defect (RAPD) using the swinging flashlight test.	Correctly checks for and determines if there is a relative afferent pupillary defect (RAPD).
	Check for accommodative response using a non-illuminated target.	Does not check for accommodative response using a non-illuminated target.	Incorrectly checks for accommodative response using a non-illuminated target.	Requires guidance to check for accommodative response using a non-illuminated target.	Check for accommodative response using a non-illuminated target.
RECORD RESULT	Record results for both eyes.	Does not record results for both eyes.	Incorrectly records results for both eyes.	Requires guidance to record results for both eyes.	Correctly records results for both eyes.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

APPLANATION TONOMETRY

Measure and record intraocular pressure.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
PREPARE PATIENT	Administer anesthetic.	Does not administer anesthetic.	Incorrectly administers anesthetic.	Requires guidance to administer anesthetic.	Correctly administers anesthetic.
	Administer fluorescein.	Does not administer fluorescein.	Incorrectly administers fluorescein.	Requires guidance to administer fluorescein.	Correctly administers fluorescein.
	Position the patient.	Does not position the patient.	Incorrectly positions the patient.	Requires guidance to position the patient.	Correctly positions the patient.
POSITION TONOMETER	Position tonometer.	Does not position tonometer.	Incorrectly positions tonometer.	Requires guidance to position the tonometer.	Correctly positions tonometer.
	Adjust the tonometer to the patient.	Does not adjust tonometer to patient.	Incorrectly adjusts tonometer to patient.	Requires guidance to adjust the tonometer to the patient.	Correctly adjusts tonometer to patient.
	Set drum to 1.	Does not set drum to 1.		Requires guidance to set the drum to 1.	Sets the drum to 1.
ADJUST LIGHT	Position filter.	Does not position filter.	Incorrectly positions filter.	Requires guidance to positions filter.	Positions filter.
	Adjust slit lamp beam intensity and length.	Does not adjust slit lamp beam intensity and length.	Incorrectly adjusts slit lamp beam intensity and length.	Requires guidance to adjusts slit lamp beam intensity and length.	Correctly adjusts slit lamp beam intensity and length.
	Position the angle of the slit lamplight source.	Does not position the angle of the slit lamplight source.	Incorrectly positions the angle of the slit lamplight source.	Requires guidance to positions the angle of the slit lamplight source.	Correctly positions the angle of the slit lamplight source.
APPLANATE	Position the prism tip and applanate the cornea.	Does not position the prism tip and applanate on the cornea.	Incorrectly positions the prism tip and applanates on the cornea.	Requires guidance to positions the prism tip and applanate the cornea.	Correctly positions the prism tip and applanates the cornea.
ADJUST MIRES	Position the mires to measure pressure.	Does not position the mires to measure pressure.	Incorrectly positions the mires to measure pressure.	Requires guidance to positions the mires and measure pressure.	Correctly positions the mires and measures pressure.
RECORD RESULTS	Record the pressure reading.	Does not record the pressure reading.	Incorrectly records the pressure reading.	Requires guidance to record the pressure reading.	Correctly records the pressure reading.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

KERATOMETRY

Measure and record corneal curvature.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
EYEPIECE	Focus the eyepiece.	Does not focus the eyepiece.	Incorrectly focuses the eyepiece.	Requires guidance to focuses the eyepiece.	Correctly focuses the eyepiece.
	Instruct patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
	Position patient.	Does not position patient.	Incorrectly positions patient.	Requires guidance to position patient.	Correctly positions patient.
SET UP	Position keratometer.	Does not position the keratometer.	Incorrectly positions the keratometer.	Requires guidance to Position the keratometer.	Correctly positions the keratometer.
	Lock Keratometer.	Does not lock keratometer.		Requires guidance to lock keratometer.	Locks keratometer.
	Occlude fellow eye.	Does not occlude fellow eye.	Incorrectly occludes fellow eye.	Requires guidance to occlude fellow eye.	Occludes fellow eye.
ADJUST MIRES	Focus the mires.	Does not focus the mires.	Incorrectly focuses the mires.	Requires guidance to focus the mires.	Focuses the mires.
	Rotate the drum to set the axis.	Does not rotate the drum to set the axis.	Incorrectly rotates the drum to set the axis.	Requires guidance to rotate the drum to set the axis.	Correctly rotates the drum to set the axis.
	Superimpose the plus sign.	Does not superimpose the plus sign.	Incorrectly superimposes the plus sign.	Requires guidance to superimposes the plus sign.	Superimposes the plus sign.
	Superimpose the minus sign.	Does not superimpose the minus sign.	Incorrectly superimposes the minus sign.	Requires guidance to superimposes the minus sign.	Superimposes the minus sign.
RECORD RESULTS	Record the horizontal power.	Does not record the horizontal power.	Incorrectly records the horizontal power.	Requires guidance to record the horizontal power.	Correctly records the horizontal power.
	Record the horizontal axis.	Does not record the horizontal axis.	Incorrectly records the horizontal axis.	Requires guidance to record the horizontal axis.	Correctly records the horizontal axis.
	Record the vertical power.	Does not record the vertical power.	Incorrectly records the vertical power.	Requires guidance to record the vertical power.	Correctly records the vertical power.
	Record the vertical axis.	Does not record the vertical axis.	Incorrectly records the vertical axis.	Requires guidance to record the vertical axis.	Correctly records the vertical axis.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
LENSOMETRY

Neutralize a pair of glasses.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
PREPARE EXAM	Turn on the lensmeter.	Does not turn on the lensmeter.		Requires guidance to turn on the lensmeter.	Turns on the lensmeter.
	Focus the eyepiece.	Does not focus the eyepiece.	Incorrectly focuses the eyepiece.	Requires guidance to focus the eyepiece.	Correctly focuses the eyepiece.
NEUTRALIZE SPHERE, CYLINDER AND PRISM	Observe lens type.	Does not observe lens type.		Requires guidance to observe lens type.	Correctly observes lens type.
	Mount spectacles on the stage.	Does not mount spectacles on the stage.	Incorrectly mounts spectacles on the stage.	Requires guidance to mount spectacles on the stage.	Correctly mounts spectacles on the stage.
	Center lens on the stage.	Does not center lens on the stage.	Incorrectly centers lens on the stage.	Requires guidance to center lens on the stage.	Centers lens on the stage.
	Adjust axis dial.	Does not adjust the axis dial.	Incorrectly adjusts the axis dial.	Requires guidance to adjust the axis dial.	Correctly adjusts the axis dial.
	Adjust power drum.	Adjust power drum.	Adjust power drum.	Adjust power drum.	Correctly adjusts power drum.
	Read the lens.	Does not read the lens.	Incorrectly reads the lens.	Requires guidance to read the lens.	Correctly reads the lens.
	Detect presence of prism.	Does not detect the presence of prism.	Incorrectly detects the presence of prism.	Requires guidance to detect the presence of prism.	Detects the presence of prism.
	Read prism base orientation.	Does not read prism base orientation.	Incorrectly reads prism base orientation.	Requires guidance to read prism base orientation.	Correctly Reads prism base orientation.
RECORD RESULTS	Record results.	Does not record results.	Incorrectly records results.	Requires guidance to record results.	Correctly records results.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

RETINOSCOPY + OR - CYLINDER

Measure and record retinoscopy in plus or minus cylinder.

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
SET UP	Choose to work in plus (+) or minus (-) cylinder.	Does not choose to work in plus (+) or minus (-) cylinder.		Requires guidance to choose to work in plus (+) or minus (-) cylinder.	Chooses to work in plus (+) or minus (-) cylinder.
	Adjust room lights.	Does not adjust room lights.	Incorrectly adjust room lights.	Requires guidance to adjust room lights.	Correctly adjusts room lights.
POSITION PHOROPTER	Position the phoropter.	Does not position the phoropter.	Incorrectly positions the phoropter.	Requires guidance to position the phoropter.	Correctly positions the phoropter.
	Level the phoropter.	Does not level the phoropter.	Incorrectly levels the phoropter.	Requires guidance to level the phoropter.	Correctly levels the phoropter.
	Fog eye not being tested	Does not fog the eye being tested.	Incorrectly fogs the eye being tested.	Requires guidance to fog the eye being tested.	Fogs the eye not being tested.
INSTRUCT PATIENT	Instruct the patient	Does not instruct the patient.	Incorrectly instructs the patient.	Requires guidance to instruct the patient.	Correctly instructs the patient.
PREPARE RETINOSCOPE	Turn on retinoscope.	Does not turn on retinoscope.		Requires guidance to turn on retinoscope.	Turns on retinoscope.
	Adjust sleeve position.	Does not adjust sleeve position.	Adjusts sleeve to incorrect position.	Requires guidance to adjust sleeve position.	Correctly adjusts sleeve position.
PERFORM RETINOSCOPY	Sweep light across the pupil to determine principal reflex.	Does not sweep light across the pupil to determine principal reflex.	Incorrectly sweeps light across the pupil to determine principal reflex.	Requires guidance to sweep light across the pupil to determine principal reflex.	Correctly sweeps light across the pupil to determine principal reflex.
	Identify the first principal meridian.	Does not identify the first principal meridian.	Incorrectly identifies the first principal meridian.	Requires guidance to identify the first principal meridian.	Correctly identifies the first principal meridian.
	Neutralize the first principal meridian to determine the sphere power.	Does not neutralize the first principal meridian.	Incorrectly neutralizes the first principal meridian.	Requires guidance to neutralizes the first principal meridian.	Correctly neutralizes the first principal meridian.
	Identify the second principal meridian to determine the cylinder axis.	Does no identify the second principal meridian.	Incorrectly identifies the second principal meridian.	Requires guidance to identify the second principal meridian.	Correctly identifies the second principal meridian.
	Neutralize the second meridian to determine the cylinder power.	Does not neutralize the second meridian.	Incorrectly neutralizes the second meridian.	Requires guidance to neutralizes the second meridian.	Correctly neutralizes the second meridian.
	Remove working distance.	Does not remove working distance.	Incorrectly removes working distance.	Requires guidance to remove working distance.	Removes working distance.
RECORD RESULTS	Record retinoscopy results including sphere power, cylinder power and cylinder axis.	Does not records retinoscopy results.	Incorrectly records retinoscopy results.	Requires guidance to record retinoscopy results.	Correctly records retinoscopy results.

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IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

REFINEMENT PLUS (+) CYLINDER OR MINUS (-) CYLINDER

Measure and record refinement in plus and minus cylinder

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
SET UP	Choose to work in plus (+) or minus (-) cylinder.	Does not choose to work in plus (+) or minus (-) cylinder.	Requires guidance to choose to work in plus (+) or minus (-) cylinder.		Chooses to work in plus (+) or minus (-) cylinder.
	Adjust room lights.	Does not adjust room lights.	Incorrectly adjust room lights.	Requires guidance to adjust room lights.	Correctly adjusts room lights.
POSITION PHOROPTER	Occlude the untested eye.	Does not occlude the untested eye.	Requires guidance to occlude the untested eye.		Occludes the untested eye.
INSTRUCT PATIENT	Instruct the patient.	Does not instruct the patient.	Incorrectly instructs the patient.	Requires guidance to instruct the patient.	Correctly instructs the patient.
REFINE PATIENT	Refine the sphere power.	Does not refine the sphere power.	Incorrectly refines the sphere power.	Requires guidance to refine the sphere power.	Correctly refines the sphere power.
	Rotate Jackson cross cylinder in place.	Does not rotate Jackson cross cylinder in place.	Incorrectly rotates Jackson cross cylinder in place.	Requires guidance to rotate Jackson cross cylinder in place.	Correctly rotates Jackson cross cylinder in place.
	Position Jackson cross cylinder to refine cylinder axis by positioning it to straddle the axis.	Does not position Jackson cross cylinder to refine cylinder axis.	Incorrectly positions Jackson cross cylinder to refine the cylinder axis.	Requires guidance to position Jackson cross cylinder to refine cylinder axis.	Correctly positions Jackson cross cylinder to refine cylinder axis.
	Refine the cylinder axis.	Does not refine the cylinder axis.	Incorrectly refines the cylinder axis.	Requires guidance to refine the cylinder axis.	Correctly refines the cylinder axis.
	Position Jackson cross cylinder to refine cylinder power by positioning it to be on axis.	Does not position Jackson cross cylinder to refine cylinder power.	Incorrectly positions Jackson cross cylinder to refine cylinder power.	Requires guidance to position Jackson cross cylinder to refine cylinder power.	Correctly positions Jackson cross cylinder to refine cylinder power.
	Refine cylinder power.	Does not refine cylinder power.	Incorrectly refine cylinder power.	Requires guidance to refine cylinder power.	Correctly refines cylinder power.
	Remove cross cylinder.	Does not remove cross cylinder.	Requires guidance to remove cross cylinder.		Removes cross cylinder.
	Re-refine the sphere.	Does not re-refine the sphere.	Incorrectly re-refines the sphere.	Requires guidance to re-refine the sphere.	Correctly re-refines the sphere.
	Assess visual acuity.	Does not assess visual acuity.	Incorrectly assesses visual acuity.	Requires guidance to assess visual acuity.	Assesses visual acuity.
RECORD RESULTS	Record refinement results including sphere power, cylinder power and cylinder axis.	Does not record refinement results.	Incorrectly records refinement results.	Requires guidance to record refinement results including sphere power, cylinder power and cylinder axis.	Correctly records refinement results including sphere power, cylinder power and cylinder axis.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
VERSIONS AND DUCTIONS

Measure versions and ductions and record abnormalities.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
PREPARE EXAM	Instruct patient.	Does not instruct patient.	Incorrectly instructs the patient.	Requires guidance to instructs the patient.	Correctly instructs the patient.
	Select equipment.	Does not select equipment.	Selects inappropriate equipment.	Requires guidance to select appropriate equipment.	Correctly selects appropriate equipment.
PERFORM VERSIONS	Instruct patient to keep both eyes open.	Does not instruct patient to keep both eyes open.		Requires guidance to instruct patient to keep both eyes open.	Correctly instructs patient to keep both eyes open.
	Move fixation target.	Does not move fixation target.	Incorrectly moves fixation target.	Requires guidance to move fixation target.	Correctly moves fixation target.
	Identify presence or absence of over-or-under action in one or both eyes.	Does not identify the presence or absence of over-or-under action in one or both eyes.	Incorrectly identifies the presence or absence of over-or-under action in one or both eyes.	Requires guidance to identify the presence or absence of over-or-under action in one or both eyes.	Correctly identifies the presence or absence of over-or-under action in one or both eyes.
PERFORM DUCTIONS	Occlude one eye.	Does not occlude one eye.		Requires guidance to occludes one eye.	Occludes one eye.
	Move fixation target.	Does not move fixation target.	Incorrectly moves fixation target.	Requires guidance to move fixation target.	Correctly moves fixation target.
	Identify presence or absence of over- or under-action in the uncovered eye.	Does not identify the presence or absence of over-or-under action in the uncovered eye.	Incorrectly identifies the presence or absence of over-or-under action in the uncovered eye.	Requires guidance to identify the presence or absence of over-or-under action in the uncovered eye.	Correctly identifies the presence or absence of over-or-under action in the uncovered eye.
	Test the other eye.	Does not test the other eye.		Requires guidance to test the other eye.	Tests other eye.
RECORD RESULTS	Record results.	Does not record results.	Incorrectly records results.	Requires guidance to record results.	Correctly records results.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
OCULAR MOTILITY – TROPIA AND PHORIA

Perform cover tests and records tropias and phorias.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct patient to fixate on a distance or near target as indicated with best correction.	Does not instruct patient to fixate on a distance or near target as indicated with best correction.	Incorrectly instructs patient to fixate on a distance or near target as indicated with best correction.	Requires guidance to instruct patient to fixate on a distance or near target as indicated with best correction.	Correctly instructs patient to fixate on a distance or near target as indicated with best correction.
EXAMINE PATIENT	Observe eye alignment.	Does not observe eye alignment.		Requires guidance to observe eye alignment.	Observes eye alignment.
PERFORM COVER TEST	Perform cover test on both eyes. -Cover one eye -Observe fellow eye for movement	Does not perform the cover test.	Incorrectly performs the cover test.	Requires guidance to perform the cover test.	Performs the cover test.
	Identify the presence or absence of a tropia.	Does not identify the presence or absence of a tropia.	Incorrectly identifies the presence or absence of a tropia.	Requires guidance to identify the presence or absence of a tropia.	Correctly identifies the presence or absence of a tropia.
PERFORM UNCOVER TEST	Perform uncover test on both eyes. -Cover one eye and pause for a few seconds then uncover -Observe the eye just uncovered for movement	Does not perform the uncover test.	Incorrectly performs the uncover test.	Requires guidance to perform the uncover test.	Performs the uncover test.
	Identify the presence or absence of a phoria.	Does not identify the presence or absence of a phoria.	Incorrectly identifies the presence or absence of a phoria.	Requires guidance to identify the presence or absence of a phoria.	Correctly identifies the presence or absence of a phoria.
PERFORM CROSS-COVER TEST	Perform cross-cover test: -Cover one eye -Move cover to the other eye -Repeat steps A & B -Observe eye being uncovered	Does not perform cross-cover test.	Incorrectly performs cross-cover test.	Requires guidance to perform cross-cover test.	Performs cross-cover test.
	Identify the total deviation (tropia plus phoria).	Does not identify the total deviation (tropia plus phoria).	Incorrectly identifies the total deviation (tropia plus phoria).	Requires guidance to identify the total deviation (tropia plus phoria).	Correctly identifies the total deviation (tropia plus phoria).
RECORD RESULTS	Record type of deviation.	Does not record type of deviation.	Incorrectly records type of deviation.	Requires guidance to record type of deviation.	Correctly records type of deviation.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
ULTRASOUND IMMERSION BIOMETRY

Measure and record axial lengths using ultrasound immersion biometry.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
SET UP EQUIPMENT	Turn on biometer.	Does not turn on biometer.		Requires guidance to turn on biometer.	Turns on biometer.
	Select settings.	Does not select settings.	Selects incorrect settings.	Requires guidance to select settings.	Selects correct settings.
PREPARE PATIENT	Position patient.	Does not position patient.	Incorrectly positions patient.	Requires guidance to position patient.	Correctly positions patient.
	Instill anesthetic drops.	Does not instill anesthetic drops.	Incorrectly instills anesthetic drops.	Requires guidance to instill anesthetic drops.	Instills anesthetic drops.
	Place scleral shell on the eye.	Does not place scleral shell on the eye.	Incorrectly places scleral shell on the eye.	Requires guidance to place scleral shell on the eye.	Places scleral shell on the eye.
	Fill shell with saline.	Does not fill shell with saline.	Incorrectly fills shell with saline.	Requires guidance to fill shell with saline.	Fills shell with saline.
MEASURE EYE	Place probe in fluid above the eye.	Does not place probe in fluid above the eye.	Incorrectly places probe in fluid above the eye.	Requires guidance to place probe in fluid above the eye.	Places probe in fluid above the eye.
	Align the probe with the visual axis.	Does not align the probe with the visual axis.	Incorrectly aligns the probe with the visual axis.	Requires guidance to align the probe with the visual axis.	Correctly aligns the probe with the visual axis.
	Freeze scan when properly aligned to the macula.	Does not freeze scan when properly aligned to the macula.		Requires guidance to freeze scan when properly aligned to the macula.	Freezes scan when properly aligned to the macula.
	Save 3 to 5 high quality scans.	Does not save 3 to 5 high quality scans.		Requires guidance to save 3 to 5 high quality scans.	Saves 3 to 5 high quality scans.
RECORD RESULTS	Record axial length.	Does not record axial length.		Requires guidance to record axial length.	Correctly records axial length.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

POTENTIAL ACUITY METER

Measure and record potential acuity.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instruct patient.	Correctly instructs patient.
PREPARE MACHINE	Set up PAM. A. Mount in slit lamp B. Turn on C. Reset diopter compensation setting to zero	Does not set up PAM.	Incorrectly sets up PAM.	Requires guidance to set up PAM.	Sets up PAM correctly.
POSITION PATIENT	Instruct patient to place chin in the chin rest and head against the forehead rest.	Does not instruct patient to place chin in the chin rest and head against the forehead rest.	Incorrectly instructs patient to place chin in the chin rest and head against the forehead rest.	Requires guidance to instruct patient to place chin in the chin rest and head against the forehead rest.	Correctly instructs patient to place chin in the chin rest and head against the forehead rest.
PERFORM TEST	Instruct patient to fixate on the eye chart inside the PAM.	Does not instruct patient to fixate on the eye chart inside the PAM.	Incorrectly instructs patient to fixate on the eye chart inside the PAM.	Requires guidance to instruct patient to fixate on the eye chart inside the PAM.	Correctly instructs patient to fixate on the eye chart inside the PAM.
	Encourage patient to read down the chart.	Does not encourage patient to read down the chart.	Incorrectly encourages patient to read down the chart.	Requires guidance to encourage patient to read down the chart.	Encourages patient to read down the chart.
	Adjust the diopter compensation.	Does not adjust the diopter compensation.	Incorrectly adjusts the diopter compensation.	Requires guidance to adjust the diopter compensation.	Correctly adjusts the diopter compensation.
	Encourage patient to make any adjustments required to improve vision.	Does not encourage patient to make any adjustments required to improve vision.	Incorrectly encourages patient to make any adjustments required to improve vision.	Requires guidance to encourage patient to make any adjustments required to improve vision.	Encourages patient to make any adjustments required to improve vision.
RECORD RESULTS		Does not record the lowest line the patient can read.	Incorrectly records the lowest line the patient can read.	Requires guidance to record the lowest line the patient can read.	Correctly records the lowest line the patient can read.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

SLIT LAMP BIOMICROSCOPY

Measure and record slit lamp examination.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to instructs patient.	Correctly instructs patient.
PREPARE EQUIPMENT	Turn on slit lamp.	Does not turn on slit lamp.		Requires guidance to turn on slit lamp.	Turns on slit lamp.
	Adjust room lights.	Does not adjust room lights.	Incorrectly adjusts room lights.	Requires guidance to adjust room lights.	Correctly adjusts room lights.
PERFORM EXAM	Position patient.	Does not position patient.	Incorrectly positions patient.	Requires guidance to position patient.	Correctly positions patient.
	Lighting techniques.	Does not use different lighting techniques as appropriate.	Incorrectly uses lighting techniques.	Requires guidance to use different lighting techniques.	Correctly uses different lighting techniques.
RECORD RESULTS	Record results.	Does not record findings.	Incorrectly records findings.	Requires guidance to record findings.	Correctly records findings.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

ISHIHARA COLOR TEST

Measure and record the Ishihara colour test.

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REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to Instruct patient.	Correctly instructs patient.
PREPARE PATIENT	Instruct patient to wear reading glasses if appropriate.	Does not instruct the patient to wear reading glasses if appropriate.		Requires guidance to Instruct patient to wear reading glasses if appropriate.	Correctly instructs the patient to wear reading glasses if appropriate.
	Determine to test monocularly or binocularly.	Does not determine to test monocularly or binocularly.		Requires guidance to determine to test monocularly or binocularly.	Correctly determines to test monocularly or binocularly.
PREPARE TEST	Use daylight or the best artificial light.	Does not use daylight or best artificial light.		Requires guidance to daylight or best artificial light.	Uses daylight or the best artificial light.
	Hold the book 75 cm from the patient.	Does not hold the book 75 cm from patient.		Requires guidance to hold book 75 cm from patient.	Holds book 75 cm from patient.
	Hold the book perpendicular to the patient.	Does not hold book perpendicular to patient.	Incorrectly holds book perpendicular to patient.	Requires guidance to hold book perpendicular to patient.	Holds book perpendicular to patient.
PERFORM TEST	Display individual plates one at a time.	Does not display individual plates one at a time.	Incorrectly displays individual plates one at a time.	Requires guidance to display individual plates one at a time.	Displays individual plates one at a time.
	Provide patient adequate time to state number on each page.	Does not provide patient adequate time to state number on each page.		Requires guidance to provide patient adequate time to state number on each page.	Provides patient adequate time to state number on each page.
RECORD RESULTS	Record findings.	Does not record findings.	Incorrectly records findings.	Requires guidance to record findings.	Correctly records findings.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

ULTRASOUND PACHYMETRY

Measure and record corneal thickness.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to Instruct patient.	Correctly instructs patient.
PREPARE EQUIPMENT	Turn on pachymeter.	Does not turn on pachymeter.		Requires guidance to turn on pachymeter.	Turns on pachymeter.
PREPARE PATIENT	Instill anesthetic drops.	Does not instill anesthetic drops.	Incorrectly instills anesthetic drops.	Requires guidance to instill anesthetic drops.	Instills anesthetic drops.
	Direct patient to fixate straight ahead.	Does not direct patient to fixate straight ahead.	Incorrectly directs patient to fixate.	Requires guidance to direct patient to fixate straight ahead.	Directs patient to fixate straight ahead.
PERFORM TEST	Place pachymeter on the central cornea.	Does not place pachymeter on the central cornea.	Incorrectly places pachymeter on the central cornea.	Requires guidance to place pachymeter on the central cornea.	Places pachymeter on the central cornea.
	Direct ultrasound perpendicular to the cornea.	Does not direct ultrasound perpendicular to the cornea.	Incorrectly directs ultrasound perpendicular to the cornea.	Requires guidance to direct ultrasound perpendicular to the cornea.	Directs ultrasound perpendicular to the cornea.
RECORD RESULTS	Record shortest measurement.	Does not record shortest measurement.	Incorrectly records shortest measurement.	Requires guidance to record shortest measurement.	Correctly records shortest measurement.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:

PATCHING

Apply a pressure patch.

INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to Instruct patient.	Correctly instructs patient.
PREPARE PATCH	Prepare sterile eye pads.	Does not prepare eye pads.	Incorrectly prepares eye pads.	Requires guidance to prepare eye pads.	Prepares eye pads.
	Prepare long strips of tape.	Does not prepare long strips of tape.	Incorrectly prepares long strips of tape.	Requires guidance to prepare long strips of tape.	Prepares long strips of tape.
PREPARE PATIENT	Clean around the eye.	Does not clean around the eye.	Incorrectly cleans around the eye.	Requires guidance to clean around the eye.	Correctly cleans around the eye.
	Instill physician ordered drops.	Does not instill physician ordered drops.	Incorrectly instills physician ordered drops.	Requires guidance to instill physician ordered drops.	Instills physician ordered drops.
	Direct patient to close both eyes.	Does not direct patient to close both eyes.	Incorrectly directs patient to close both eyes.	Requires guidance to direct patient to close both eyes.	Directs patient to close both eyes.
PATCH	Fold one sterile pad in half and place on eyelid and place a second sterile pad over the first.	Does not fold one sterile pad in half and place on eyelid and place a second sterile pad over the first.	Incorrectly folds one sterile pad in half and place on eyelid and place a second sterile pad over the first.	Requires guidance to fold one sterile pad in half and place on eyelid and place a second sterile pad over the first.	Folds one sterile pad in half and place on eyelid and place a second sterile pad over the first.
	Apply first piece of tape firmly over the pads from the forehead to the cheek.	Does not apply first piece of tape firmly over the pads from the forehead to the cheek.	Incorrectly applies first piece of tape firmly over the pads from the forehead to the cheek.	Requires guidance to apply first piece of tape firmly over the pads from the forehead to the cheek.	Applies first piece of tape firmly over the pads from the forehead to the cheek.
	Ensure tape is tight enough to prevent blinking.	Does not ensure tape is tight enough to prevent blinking.		Requires guidance to ensure tape is tight enough to prevent blinking.	Ensures tape is tight enough to prevent blinking.
	Secure the patch with the rest of tape.	Does not secure the patch with the rest of tape.	Incorrectly secures the patch with the rest of tape.	Requires guidance to secure the patch with the rest of tape.	Correctly secures the patch with the rest of tape.
	Avoid fixing tape too close to the mouth or jaw.	Does not avoid fixing tape too close to the mouth or jaw.		Requires guidance to avoid fixing tape too close to the mouth or jaw.	Avoids fixing tape too close to the mouth or jaw.

IJCAHPO ASSESSMENT – COMPETENCY RUBRIC:
OPTICAL COHERENCE TOMOGRAPHY

Perform OCT.

IJCAHPO
INTERNATIONAL JOINT COMMISSION ON ALLIED HEALTH PERSONNEL IN OPHTHALMOLOGY®

REQUIRED PERFORMANCE	STEPS	NOVICE	BEGINNER	INTERMEDIATE	COMPETENT
INSTRUCT PATIENT	Instruct Patient.	Does not instruct patient.	Incorrectly instructs patient.	Requires guidance to Instruct patient.	Correctly instructs patient.
PREPARE INSTRUMENT	Adjust table height.	Does not adjust table height.	Incorrectly adjusts table height.	Requires guidance to adjust table height.	Correctly adjusts table height.
	Enter patient data.	Does not enter patient data.	Incorrectly enters patient data.	Requires guidance to enter patient data.	Correctly enters patient data.
	Select scan type.	Does not select scan type.	Selects incorrect scan type.	Requires guidance to select scan type.	Selects correct scan type.
POSITION PATIENT	Direct patient to place chin in the chin rest and forehead against the bar.	Does not direct patient to place chin in the chin rest and forehead against the bar.		Requires guidance to direct patient to place chin in the chin rest and forehead against the bar.	Directs patient to place chin in the chin rest and forehead against the bar.
	Direct patient to fixation target.	Does not direct patient to fixation target.		Requires guidance to direct patient to fixation target.	Directs patient to fixation target.
	Align instrument cross hair to the center of the pupil.	Does not align instrument cross hair to the center of the pupil.	Incorrectly aligns instrument cross hair to the center of the pupil.	Requires guidance to align instrument cross hair to the center of the pupil.	Correctly aligns instrument cross hair to the center of the pupil.
	Center the image.	Does not center the image.	Incorrectly centers the image.	Requires guidance to center the image.	Correctly centers the image.
	Focus the image.	Does not focus the image.	Incorrectly focuses the image.	Requires guidance to focus the image.	Correctly focuses the image.
	Optimize the scan.	Does not optimize the scan.	Incorrectly optimizes the scan.	Requires guidance to optimize the scan.	Correctly optimizes the scan.
SCAN	Instruct patient to open both eyes wide.	Does not instruct patient to open both eyes wide.		Requires guidance to instruct patient to open both eyes wide.	Correctly instructs patient to open both eyes wide.
	Capture image.	Does not capture image.	Incorrectly captures image.	Requires guidance to capture image.	Correctly captures image.
ANALYZE SCANS	Analyze scans.	Does not analyze scans.	Incorrectly analyzes scans.	Requires guidance to analyze scans.	Correctly analyzes scans.

Appendix B: Ethical Approval

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: 24887

Principal Investigator:
Mr. Craig Simms, Graduate Student
Faculty of Humanities & Social Sciences\Master of Education in Open, Digital, and Distance Education (MDDE)

Supervisor/Project Team:
Dr. Pamela Walsh (Supervisor)

Project Title:
The Correlation Between Rubrics and Exam Performance

Effective Date: December 8, 2022 **Expiry Date:** December 7, 2023

Restrictions:
Any modification/amendment to the approved research must be submitted to the AUREB for approval prior to proceeding.

Any adverse event or incidental findings must be reported to the AUREB as soon as possible, for review.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

An Ethics Final Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: December 08, 2022**

Tobias Wiggins, Chair
Faculty of Humanities & Social Sciences, Departmental Ethics Review Committee

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Athabasca University Research Ethics Board
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