Guide to applying the WHO Eye Care Competency Framework



World Health Organization

Guide to applying the WHO Eye Care Competency Framework

World Health Organization

Guide to applying the WHO Eye Care Competency Framework

ISBN 978-92-4-006142-2 (electronic version)
ISBN 978-92-4-006143-9 (print version)

© World Health Organization 2022

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization (http://www.wipo.int/amc/en/mediation/rules/).

Suggested citation. Guide to applying the WHO Eye Care Competency Framework. Geneva: World Health Organization; 2022. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

Sales, rights and licensing. To purchase WHO publications, see http://apps.who.int/bookorders. To submit requests for commercial use and queries on rights and licensing, see https://www.who.int/copyright.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Contents

Acknowledgements iv
Abbreviations v
Introduction vi
Stage 1: Planning 1
Stage 2: Understanding the context 3
Stage 3: Using the ECCF 5
Stage 4: Developing a competency framework 10
Stage 5: Developing a competency-based curriculum 12
Stage 6: Disseminating 19
Annex 1: Case studies 20
Annex 2: Competency framework template 27

Acknowledgements

The World Health Organization (WHO) would like to thank all whose dedicated efforts and expertise contributed to this resource.

This resource was developed by Mitasha Yu (Lead), Vera Carneiro, Alarcos Cieza, Stuart Keel, Silvio Paolo Mariotti and Andreas Mueller (Vision and Eye Care Programme, WHO).

The resource benefited from the contributions of the following WHO staff: Bente Mikkelsen (Director, Department of Noncommunicable Diseases) and Minghui Ren (Assistant Director-General Universal Health Coverage/ Communicable and Noncommunicable Diseases).

The following organizations providing support as pilot sites to better understand the process of applying the ECCF: Aravind Eye Care System, India; International Joint Commission on Allied Health Personnel in Ophthalmology (IJCAHPO), United States of America, in partnership with L V Prasad Eye Institute, India; L'Ordre des Optométristes du Québec, Canada; Singapore National Eye Centre, Singapore.

Special thanks are given to R Deepa, SR Krishnadas, Dhivya Ramsamy, B Udayakumar (Aravind Eye Care System, India); Jude Stern (International Agency for the Prevention of Blindness); Lynn D Anderson, Matti Koivula, Craig Simms, (IJCAHPO); Prashant Garg, Vijay Kumar Yelagondula (L V Prasad Eye Institute, India); James C Tsai (Icahn School of Medicine at Mount Sinai, New York); Karl Golnik (University of Cincinnati); William Astle (Alberta Children's Hospital, Canada); Julie Brule, Claudine Champagne, Éric Poulin (L'Ordre des Optométristes du Québec, Canada); Vicky Drury, Wesley Guang Wei Chong, Thiyagarajan Jayabaskar, Yew Jin Lee, Siew Leng Lim, Claire Ong, Ian Yeo San, Heidi Tai, Carin Lay San Tan, Chung Sze Ting, Karen Zhang (Singapore National Eye Centre, Singapore) who provided expert feedback on the drafts of the guide and the case studies from the pilot sites.

Development of this publication was supported financially by (in alphabetical order) CBM, Sightsavers, The Fred Hollows Foundation, and the Zhongshan Ophthalmic Center, Sun Yat-sen University, China.

Abbreviations

AOP	Allied ophthalmic personnel
ECCF	Eye care competency framework
ECSAT	Eye Care Situation Analysis Tool
IJCAHPO	International Joint Commission on Allied Health Personnel in Ophthalmology
LVPEI	L V Prasad Eye Institute (India)
OOQ	L'Ordre des Optométristes du Québec (Canada)
SNEC	Singapore National Eye Centre
WHO	World Health Organization

Introduction

The WHO Eye Care Competency Framework (ECCF) is a tool for workforce planning and development, conveying the expected or aspired performance of the eye care workforce from community to tertiary levels of care. To apply the tool appropriately, first it must be adapted to be suitable to the context. This guide to applying the WHO ECCF provides a step-by-step approach on how users can adapt and use the ECCF in their context. Additionally, it guides users to develop their own competency framework and/or competency-based curricula for their setting.

Four case studies are included in the guide to assist users understand the application of the ECCF in different settings.

Purpose

To provide guidance on the application of the ECCF to individual contexts and assist in the development of a context-specific competency framework and/or competency-based curricula.

Scope

The guide is aimed a diverse range of users interested in using and applying the ECCF to support workforce development.

- **Supporting policy-makers and regulatory authorities,** when the eye care workforce is being planned and evaluated. The guide provides an overview on the steps to develop a contextualized competency framework that is aligned with the ECCF. It does not provide guidance on which competencies to include in the contextualized competency framework.

- **Supporting eye care service providers,** when employment guidelines, position descriptions, performance expectations or performance appraisals are being developed and revised. The guide provides an overview of the steps to identify, extract and adapt the relevant components of the ECCF. It does not provide guidance on which competencies to include in these workforce documents, or how to develop these workforce documents.

- **Supporting eye care nongovernmental organizations,** when advocating and providing input to evaluate and plan for the eye care workforce or develop their own workforce. The guide provides an overview of the steps to identify, extract and adapt the relevant components of the ECCF; to make the ECCF contextualized and appropriate for the setting.

- **Supporting eye care education and training institutions,** when curricula are being developed and revised, the guide provides the steps to identify, extract and adapt the relevant components of the ECCF, and an overview on how to incorporate them in a competency-based curriculum. It does not provide the content of the curricula and guidance on which competencies to include.

It is recognized in the guide that there are many aspects that support a training/education programme, and that the benefits of a competency-based curriculum can only be fulfilled when it is part of a larger competency-prioritized environment where the outcomes of training/education programmes are aligned with the expectations of practice and regulation, and the supportive infrastructure available.

Key terminology

- **Competency framework:** a tool which shows an organized and structured representation of a set of interrelated and meaningful competencies *(1)*.

- **Competency-based curriculum:** a curriculum which highlights the complex outcomes of learning rather than what learners are expected to learn about. In principle, such a curriculum is learner-centred and adaptive to the changing needs of learners, teachers and society *(2)*.

Case studies

The guide includes four case studies where the ECCF was piloted, each showcasing a unique context illustrating the versatility and flexibility of the ECCF. The case studies include using the ECCF for:

- workforce review in a hospital setting (pilot site: Aravind Eye Care, India);

- development of a professional body's competency framework (pilot site: Order of Optometrists, Québec, Canada);

- development of professional body's competency-based framework and curriculum (pilot site: International Joint Commission on Allied Health Professional in Ophthalmology in partnership with L V Prasad Eye Institute, India); and

- development of a competency-based curriculum (pilot site: Singapore National Eye Centre).

To have a thorough understanding of how to apply the ECCF in different settings, Stage 3: Using the ECCF (see Fig. 1), was the focus of the case study process.

Stages in applying the ECCF

1. Planning

2. Understanding the context

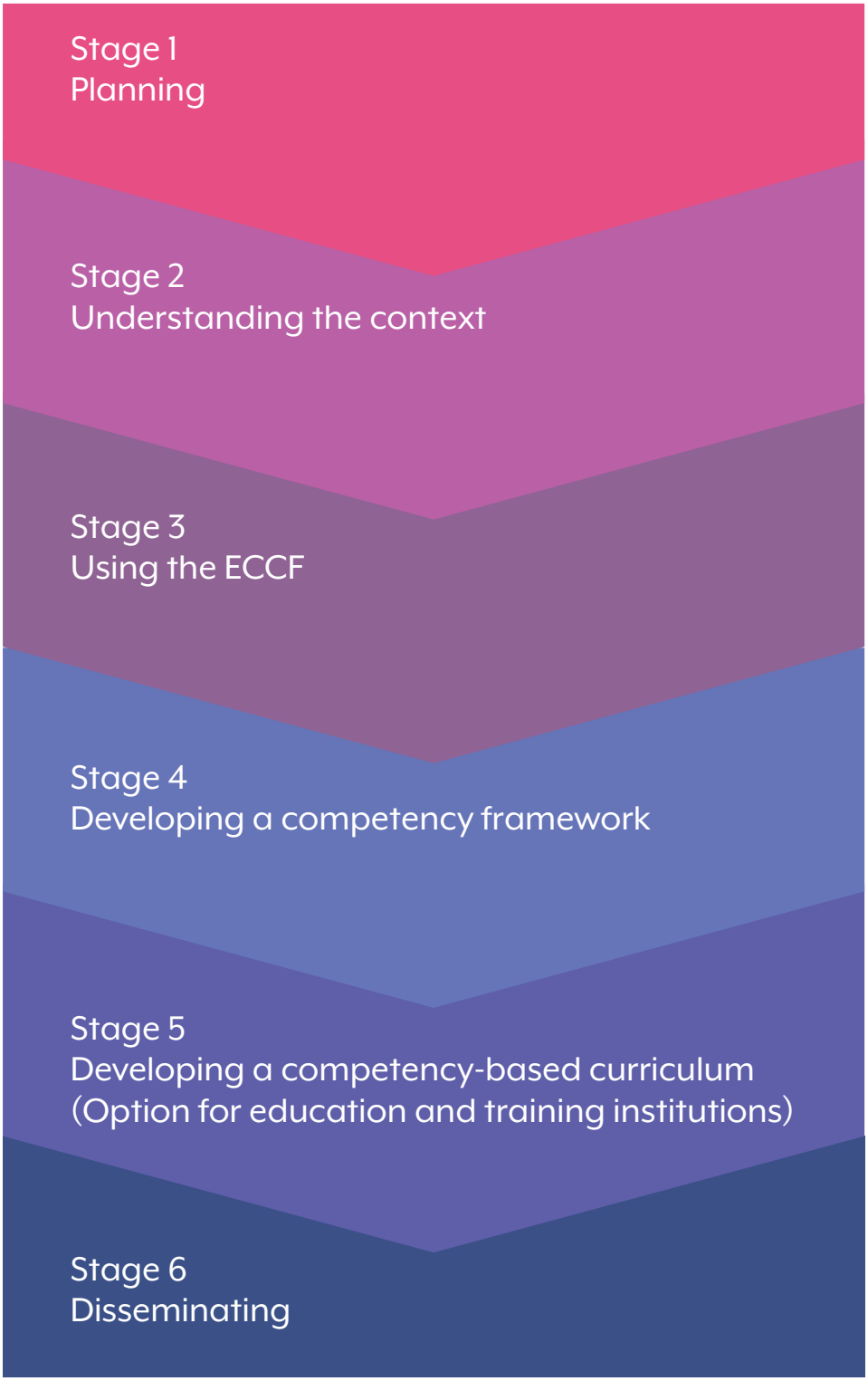
3. Using the ECCF

4. Developing a competency framework

5. Developing a competency-based curriculum (option for education and training institutions)

6. Disseminating

Fig. 1 The key stages of applying the ECCF



Stage 1: Planning

1.1 Introduction to the ECCF

To understand the features and scope of the ECCF to confirm this is appropriate for your context see pages 7–8 of the ECCF. The ECCF has been developed for education and training institutions to introduce the value of using a competency-based approach and to facilitate the development of a competency-based curriculum.

1.2 Understand the needs of stakeholders and obtain their support

Through a participatory approach, engage all relevant stakeholders to ensure that their needs are being understood and considered throughout the stages of applying the ECCF. This approach will promote uptake by users of the competency framework and/or competency-based curriculum, through an increased sense of ownership by being engaged in the process from the start. Engagement may be in the form of representation within a working group or consultation process. This approach will lead to the development of a competency framework and/or competency-based curriculum appropriate for the context and which will meet the needs of the target workforce and population.

The stakeholders include human resource development leaders, academics, teachers, researchers, service providers (potential employers across public and private sectors), professional associations, regulatory bodies, user groups such as patient groups and community groups, minority groups or marginalized populations including indigenous representatives, programme developers and managers and eye care workforce experts. If there are plans to develop a competency-based curriculum, consider also including learners or prospective learners.

While obtaining feedback from a variety of sources can be a lengthy process, it is essential for developing a solid structure, ensuring buy-in and the adoption of the finished product. Consider including decision-makers and people involved with the eye care workforce.

Once key stakeholders have been identified, form a key stakeholder working group. This group should be regularly updated as they can assist with any challenges or issues, and provide support as needed.

1.3 Determine the characteristics of the competency framework and/or the competency-based curriculum

Determine the characteristics of the competency framework and/or the competency-based curriculum appropriate for the setting. This will include identifying:

- Where the competency framework and/or the competency-based curriculum will be used.
- The main users.

- Which eye care workers (target workforce) will be addressed, for example, will it be single or multiple occupational groups?

The scope of the competency framework and/or the competency-based curriculum. For example, the scope could be within the constraints of current resources or an aspirational framework, which stakeholders could work towards to meet the needs of the population the workforce is servicing.

Consult the key stakeholder working group for their input in determining the characteristics of the competency framework and/or the competency-based curriculum.

1.4 Identify resources required and assign responsibilities

Plan out the resources required to apply the ECCF. Identify key personnel involved and their roles and responsibilities. Develop a workplan with a schedule and where personnel time is allocated. Form a team consisting of a core team of members and a project leader who is able carry out the stages of applying the ECCF. It is also critical to identify who can approve and sign off on key decisions. This step also provides the opportunity to identify and assign roles and responsibilities to stakeholders and key actors outside the core team.

Other resources such as infrastructure for meetings and travel will be required. Once the key personnel, infrastructure and travel have been identified, adequate funding will need to be allocated to support the resources through the stages.

Depending on the context, the process of applying the ECCF to develop a competency framework can take an estimated 12–18 months, and potentially longer to develop a competency-based curriculum.

Checklist for Stage 1

- ☐ Are the key stakeholders supportive of the approach?
- ☐ Has a key stakeholder working group been formed?
- ☐ Have the characteristics of the competency framework been determined?
- ☐ Have adequate resources (a core team with a leader) and funding been allocated to conduct the key stages of applying the ECCF?

Stage 2: Understanding the context

2.1 Conduct a situation analysis

Review the current situation using tools such as the WHO Eye Care Situation Analysis Tool (ECSAT)1 or similar workforce evaluation tool, for a comprehensive understanding of the current workforce. Using the ECSAT, the following components of your workforce can be examined:

- eye care needs of the population that is serviced by the target workforce;
- availability of workforce;
- training and competencies of the workforce (including curricula and existing competencies);
- planning and management of the workforce;
- workforce regulations (including workplace legislation and scope of practice); and
- workforce mobility, motivation and support (including how an eye care worker interacts within the community and with other professions).

If developing a competency-based curriculum, it is critical to also review education programme requirements including:

- recruitment and entrance requirements to the training programme;
- delivery mode of education;
- end of programme qualification;
- accreditation and legal recognition; and
- workplace positions and availabilities.

2.2 Understand your target workforce

Before developing a competency framework and/or the competency-based curriculum, obtain a thorough understanding of the eye care workers that will be addressed (target workforce). This includes information gathered in Step 2.1, as well as how the target workforce is part of the current health system, the links and mechanisms between the target workforce and other eye care providers, and the current perceptions of the target workforce from within and outside the group. This will ensure that your competency framework will be appropriate and relevant to your target workforce.

Note: The target workforce could include eye care workers from single or multiple occupational groups.

[1] To access the ECSAT, please see https://www.who.int/news/item/14-10-2021-eye-care-situation-analysis-tool-(ecsat)-launch

2.3 Conduct a desk review of existing workforce documentation

Review existing documentation for the target workforce such as existing relevant competency frameworks and standards, relevant legislation, policies, regulations and guidelines. If developing a competency-based curriculum, it is critical to also review existing curricula and other relevant education documents.

This step is particularly useful in identifying any gaps with the existing documentation to meet the target workforce needs, as well as minimizing any duplication which might occur as a result of developing a new competency framework and/or the competency-based curriculum.

Checklist for Stage 2

- ☐ Has a situation analysis been conducted to have good understanding of your setting?
- ☐ Is there a thorough understanding of the target workforce?
- ☐ Has the relevant existing documentation for the target workforce been reviewed?

Stage 3: Using the ECCF

3.1 Become familiar with the concepts

Familiarize yourself with the definitions of key components of the ECCF including the domains, competencies, activities, behaviours, tasks, knowledge and skills, and levels of proficiencies, by referring to pages 12–15 of the ECCF.

3.2 Identify and extract key components from the ECCF

Consider the ECCF as a menu, where items that are appropriate for the setting can be chosen. The competencies and behaviours of the ECCF are core to all contexts, the activities and tasks are not. It is possible that entire activities may be excluded, or only certain tasks within an activity included. The ECCF activities and tasks are designed to provide an organizational structure for the vast majority of eye care work; however, in some contexts, it may be appropriate to add additional ones. Work through the ECCF to identify and extract the activities, tasks, knowledge and skills (key components) relevant to the context.

Navigating around the levels of proficiency

The method used to extract the ECCF's key components will depend on the target workforce and competency framework being created for them, specifically whether it will define multiple levels of proficiency or a single level. The ECCF describes behaviours and tasks over four levels of proficiency. When identifying and extracting from the ECCF, select the level or levels appropriate to the context, and, if necessary, modify the description according to the agreed expectations of the worker/s. In cases where the target workforce being addressed is for a single occupational group, different levels of proficiencies in the ECCF may still be selected according to the context. For example, the eye health worker may be expected to perform at proficiency level 1 in most instances, and in particular activities they may be expected to perform at proficiency level 2.

Sub-steps to identify and extract key components from the ECCF

1. Begin with Domain 1 (Practice). Read through each competency and its corresponding behaviour in the ECCF. Highlight the cell that is relevant for the target workforce.
   If the target workforce is across multiple levels, you may be highlighting behaviours across multiple levels of proficiency.

2. Read through the knowledge and skills attached to the competency in the ECCF. Highlight the ones relevant for the target workforce.
   The knowledge and skills presented in the ECCF are not exhaustive and can be added to.

3. Read through each activity and its corresponding tasks in the ECCF. Highlight the cell that is relevant for the target workforce.
   If the target workforce is across multiple levels, you may be highlighting tasks across multiple levels of proficiency.

4. Read through the knowledge and skills attached to the activity in the ECCF. Highlight the ones relevant for the target workforce.
   The knowledge and skills presented in the ECCF are not exhaustive and can be added to.

5. Repeat the above steps for each of the six domains.

Tables 1 and 2 show examples of how competencies and activities (respectively) have been identified for an ophthalmic nurse working in a rural health centre. The cells shaded in green indicate which behaviours and tasks have been identified to be relevant and will be extracted. The text highlighted in ***bold italic*** indicates which knowledge and skills have been identified to be relevant and will be extracted.

In both tables, the behaviours and tasks that are identified to be relevant are across different levels of proficiency (Intermediate level 2 and Introductory level 1).

In the case of activities and tasks, not all have been identified to be suitable for the context, e.g. MLA1.2 has not been selected as it is not relevant for this case example.

Table 1. Example of extracting competencies and behaviours from ECCF Domain 1 (Practice) for an ophthalmic nurse working in a rural health centre

Practice competencies (PC)	Knowledge (K) and Skills (S)	Summary	Behaviours			
			Introductory level (1)	Intermediate level (2)	Advanced level (3)	Expert level (4)
PC1 Maintains people-centred practice	***PC1K: General principles of people-centred care and the role the community plays; Principles of universal health coverage;*** Holistic approaches to planning and assessing the needs of people, their families and communities; ***External factors affecting a person's engagement with eye care and other health services, including availability, accessibility, acceptability and quality; Cultural factors and beliefs impacting attitudes and behaviours towards health, disease and care-seeking; Additional needs of vulnerable populations in accessing and engaging with health and eye care services;*** Methods of engaging a person and their family in the person's treatment and empowering them in decision-making. PC1S: Formulating appropriate people-centred management plans; ***Problem-solving; Reflective practice and critical thinking;*** Presenting information in care team forums; Advanced communication and interpersonal skills including inclusive communication; Digital literacy for virtual meetings.	**PC1.1 Care for the person, their family and carers**	Considers the perspectives of a person, their family and carers as participants in, and beneficiaries of, trusted eye care services, with support.	Contributes to people-centred management plans for a person, their family and carers, as directed.	Designs, implements and evaluates people-centred integrated management plans for a person, their family and carers, tailoring care for their needs and preferences in a humane and holistic way.	Mobilizes resources, promotes and makes systems-based changes to enable quality people-centred integrated eye care services, tailored for a person, their family and carers.
		PC1.2 People to be well informed and supported	Ensures a person, their family and community have the information and support they need to make decisions and participate in their own care, with support.	Coordinates implementation of resources to support people-centred care, as directed.	Identifies gaps; implements and evaluates resources to support people-centred care.	Creates opportunities and promotes resources to support people-centred care.
		PC1.3 Collaborative care relationship with the person and their family	Fosters a positive and collaborative partnership with the person, their family and carers, with support.		Fosters a positive and collaborative partnership with the person, their family, carers, other health workers, and supportive services involved in the person's care.	
		PC1.4 Considers the community	Considers community benefit in programmes and/or policies, with support.	Contributes to considering community benefit in the design of programmes and/or policies, as directed.	Designs, implements and evaluates programmes and/or policies, using participatory approaches to consider community benefit in addition to individual benefit to a person.	Advocates and leads efforts to modify programmes and/or policies to adapt to the needs of the community.

Table 2. Example of extracting activities and tasks from ECCF Domain 4 (Management and Leadership) for an ophthalmic nurse working in a rural health centre

Management and Leadership activities (MLA)	Knowledge (K) and Skills (S)	Summary	Tasks			
			Introductory level (1)	Intermediate level (2)	Advanced level (3)	Expert level (4)
MLA1 Managing an eye care team	MLA1K: Factors underlying effective teamwork; ***Team roles, responsibilities and scope of practice relevant to eye care service; Personal role within the team; Activities and tasks required to deliver eye care;*** Approaches to monitoring performance of eye care team members; Different management and leadership styles; ***Different levels of monitoring and supervision, delegation, reporting and indications for applying these;*** Policies and legislation for human resource management including recruitment processes and performance management; ***Approaches to interviews and selection processes.*** MLA1S: ***Maintaining accountability and responsibility during task delegation; Allocating tasks; Delegating responsibilities;*** Identifying strengths and limitations of team members and how to manage these to best effect; ***Using respectful language appropriate for a given difficult situation, crucial conversation, or conflict;*** Recruiting team members.	**MLA1.1 Delegating tasks/Task allocation**	Adhering to delegated tasks, in line with personal level of proficiency and scope of practice.	Delegating tasks to others, according to ability, level of preparation, proficiency, and scope of practice.	Identifying, managing, and monitoring of delegated tasks within the eye care team with available resources, and establishing appropriate human resources for the eye care service.	Evaluating and advocating for additional support for the eye care team to effectively distribute the task load and improve care.
		MLA1.2 Recruitment	Assisting in the induction of a new member to the eye care team.	Contributing to the recruitment process.	Managing the recruitment process.	Providing guidance to the recruitment process, particularly in the selection of the recruit.
		MLA1.3 Monitoring performance	Participating in self-performance reviews and setting of key performance indicators, with support.	Contributing to performance reviews of self and others, and development of key performance indicators, seeking feedback to improve performance.	Carrying out performance review of self and eye care team members, giving constructive feedback to improve delivery of eye care.	Implementing and evaluating performance managing systems and procedures.
		MLA1.4 Reporting structures	Participating in, and providing input on, lines of reporting and support structures.		Implementing lines of reporting and supporting structure for eye care team members.	Evaluating lines of reporting and support structures for eye care team members, implementing changes for improvement.

3.3 Adapt the extracted components

Once the relevant content has been extracted from the ECCF, it may still need to be adapted and modified to be made more appropriate for the context. For example, the changes may depend on the regulations around scope of practice.

In a further step, ensure that the terminology and language are suitable for the users of the framework. The ECCF uses language that is clear and favourable to translation; however, every context is different. Thus, amend terminology and language according to the context.

The adaptation and modification of the key components extracted from the ECCF enables the competency framework to be more acceptable, and is critical for adoption by users. If the aim is to develop a competency-based curriculum, it is important to think about the role of the framework within the curriculum when it is being adapted.

Checklist for Stage 3

- ☐ Has familiarization with the key components of the ECCF been completed?
- ☐ Have the key components of the ECCF been identified and extracted?
- ☐ Have adaptations and modifications to the extracted key components been made to suit the context?

Stage 4: Developing a competency framework

4.1 Draft a competency framework

There are several methods to draft a competency framework depending on your existing resources. If there are no existing resources and you are starting from scratch, you can use the ECCF as the main template to draft your own adapted competency framework. For example, you can paste in the extracted and adapted key components of the ECCF into the template in Annex 2, to create a draft competency framework. However, if there is already an existing competency framework, you can use extracted and adapted key components of the ECCF, to fill in any gaps. In both methods, the newly drafted competency framework will be aligned to the ECCF.

One of the first steps in your adapted competency framework is to provide an explanation in the introductory text and make reference to the ECCF as a source.

If the draft competency framework includes multiple levels of proficiency, you can include the same labels as the ECCF (e.g. Level 1 Introductory) or develop your own levels such as “graduate”, “novice”, “postgraduate”, “expert” or similar.

When drafting a competency framework, it is useful to remember that it is not a protocol or practice guideline. The framework’s objective is not to describe the steps involved in completing an aspect of work or when a certain approach should be taken. Rather, the competencies and activities should describe what aspects of work need to be expected, and how those can be assessed or measured, to indicate successful performance.

4.2 Review by key stakeholder working group

Review of the competency framework draft is particularly useful to ensure that the content is appropriate and addresses any gaps. Continuing to engage with your key stakeholder working group through this review process will also raise awareness and promote a sense of ownership by the users of the competency framework. This review process may take several rounds to get feedback circulated and changes confirmed by all members of the key stakeholder working group.

4.3 Validation by a wide range of stakeholders and peer reviewers

Reaching out to a wide range of stakeholders will further validate the contents of the competency framework. This may include users of the framework, members of the target workforce, regulatory bodies and professional associations that represent the target workforce, researchers, academics, policy-makers, clinicians and managers.

Validation of the competency framework may be carried out through a survey asking about the readability, accuracy, applicability and acceptability of its contents. For example, the ECCF was validated through a

modified Delphi survey enabling better readability, accuracy, applicability, and acceptability of the framework.

4.4 Finalization of a competency framework

A competency framework can be finalized when the developers are satisfied that the objectives have been met, and that comments from reviewers have been responded to adequately.

Following several rounds of review and validation, a final version is created. There may not always be full agreement on all statements, even after multiple rounds of feedback.

Setting a limit on the number of times the competency framework is reviewed may be advantageous practically. This limit should be proportional to the level of consensus, meaning that it may require more rounds if there is significant disagreement on the content than if there is widespread agreement.

An important final step is to acknowledge all the contributors who assisted in the development the competency framework.

Checklist for Stage 4

- ☐ **Has a competency framework been drafted and circulated for review?**
- ☐ **Is there list of reviewers to provide feedback for the draft competency framework?**
- ☐ **Has the feedback and changes been considered and/or adopted from the review and validation process?**
- ☐ **Has the competency framework been finalized?**

Skip to Stage 6: Disseminating, if you are not planning to develop a competency-based curriculum.

Stage 5: Developing a competency-based curriculum (option for education and training institutions)

This stage is specifically for education and training institutions planning to develop a competency-based curriculum. A competency-based curriculum highlights the complex outcomes of learning rather than what learners are expected to learn about. In principle, such a curriculum is learner-centred and adaptive to the changing needs of learners, teachers and society.

There are several methods to draft a competency-based curriculum depending on your existing resources. The key elements found in curricula include the learning outcomes, content of learning, the sequencing of content, learning experiences, teaching methods and the formats of assessment, as well as continuous quality improvement and programmatic evaluation *(3)*.

This guide provides an overview for developing learning outcomes, planning learning experiences, sequencing and assessments that will support the systematic approach to curricular development, while being aligned to the ECCF. The curricular content and specific education approaches should be determined by the institution. Institutions developing programmes or designing curricula are encouraged to look beyond the guide to the wealth of related evidence and resources, and to partner with experts.

5.1 Develop learning outcomes

Curricular outcomes can be aligned to both the behaviours and activities outlined in the ECCF. The ECCF activities provide the holistic areas of eye care practice that a learner will be able to perform on completion of the course. However, the ECCF competencies are not an endpoint as the behaviours will continue to develop after completion of a learning programme.

When identifying the ECCF competencies and activities relevant for the learning programme, it is important to define which behaviours and tasks should be performed at the appropriate level of proficiency, and the tools and the level of supervision required. With these key components defined in Stage 3 (Using the ECCF), learning outcomes can be developed *(4)*. The learning outcomes can then be used to identify the relevant knowledge and skills that enable learners to perform those tasks.

A learning outcome is a clear and specific statement that articulates what learners should know or be able to do at the successful completion of their learning programme. They describe the conditions under which these activities will take place, and the accepted performance level. Learning outcomes allow behaviours or tasks to be broken down into units of learning that can be taught and assessed until the learner is competent in that behaviour or task. Learning outcomes are preferred to learning objectives as they are “learner-centric”, and activities required to achieve learning programme goals are written from the learner’s perspective and are therefore more meaningful to students. Meanwhile, learning objectives are commonly “teacher-centric”, and activities required to achieve training

programme goals are determined by the teacher. Learning outcomes include the following:

- description of the level of performance expected on completion of the programme;
- the time available for achieving the behaviour or task; and
- the level of autonomy learners will have after completing the programme.

If learning outcomes already exist, consider reviewing them through the lens of the ECCF competencies and activities that were identified and extracted in the previous stages. If learning objectives exist, consider turning them into learning outcomes. Table 3 provides an example of learning outcomes for ECCF Practice domain competency (PC4) and associated behaviours at the intermediate level of proficiency. Note that the learning outcomes presented are examples only; they are not applicable to all contexts, nor is the list exhaustive.

Table 3. Example of programme learning outcomes for ECCF Practice Domain competency PC4 and associated behaviours

Practice competencies (PC)	Knowledge (K) and Skills (S)	Summary	Behaviour Intermediate level (2)	Learning outcomes On completion of the programmer, the learner:
PC4 Applies a rational approach to problem-solving and decision-making	PC4K: General principles of rational problem-solving; Tools for collecting and collating relevant information; Innovative and emerging approaches to models of care; Socioeconomic, cultural, historical and political determinants of health and inequality; Resources available to provide care required. PC4S: Demonstrating an investigatory and analytical approach to problem-solving; Reflective practice and critical thinking.	**PC4.1 Problem-solving and decision-making**	Collates relevant information on the person, their history and contextual factors, to clearly define the problem in order to facilitate problem-solving and decision-making.	PC4.1.1 Describes the potential role of personal, environmental and health factors in impacting vision to a person, their family and carers through an appropriate method.
				PC4.1.2 Constructs a problem list during a vision assessment, that captures the personal, environmental and health factors specific to a person and their family that clearly defines the presenting problem.
		PC4.2 Innovative	Identifies innovative approaches to address challenges.	PC4.2.1 Engages in a joint problem-solving discussion with a person and their family to create a tailored approach to address the challenges.
				PC4.2.2 Identifies a range of potential solutions to optimize eye health by addressing relevant personal, environmental and health factors.
				PC4.2.3 Identifies factors that contribute to selection of the most appropriate approach for a person and their family.
		PC4.3 Resourceful	Optimizes care provided to a person within the available resources and identifies any additional resources required to provide optimal care.	PC4.3.1 Identifies different sources of information that can be used to rationalize the care approach.
				PC4.3.2 Demonstrates the ability to manage conflicting information from different sources.
				PC4.3.3 Presents a complete picture of a situation to a person and their family to facilitate their optimal engagement in decision-making.

Source: Adapted from the WHO *Using a contextualized competency framework to develop rehabilitation programmes and their curricula (5).*

5.2 Plan the learning experiences

Learning experiences allow consideration of how learning can be made engaging and effective. To maximize beneficial learning from experiences at different phases, learners require a variety of qualitative and quantitative support. Learning programmes should enhance the elements of motivation, discovery, innovation, social service, cultural exploration and personal development ().

For competencies and activities to be relevant in the real world, they must be applied and used simultaneously by learners. Learners should exhibit certain behaviours when conducting tasks, at their required level of proficiency. For example, in conducting the activity of a vision assessment and eye examination with a person (PA3 from ECCF Practice domain), a learner needs to apply competencies associated with people-centredness practice, evidence-based practice, rational approach to problem-solving, performing within scope of practice and, communication (competencies from the ECCF Practice domain), as well as competencies from other domains, such as Professionalism and Evidence. Learning experiences that are as close as possible to real-world scenarios, give opportunity for learners to develop these competencies and activities, until they are competent for actual real-world scenarios.

Learning experiences can be face-to-face, online or in blended modes for individual and/or group experiences. In blended modes, it is common for programmes to expect learners to engage individually and collaboratively with online interactive resources prior to, during or after scheduled learning activities. Further, models of learning experience can include scenario-based learning, practice-based learning, and/or independent reflective learning. Clinical placements provide a rich learning experience and should be prioritized for learners. In cases where local resources are limited, clinical placements at appropriate similar learning environments elsewhere in the country or abroad, should be considered and planned for.

5.3 Sequencing

Sequencing involves the development of a curriculum plan, where curriculum content, learning outcomes and learning experiences within a curriculum are organized into meaningful units or modules. During this process, the amount of time required for learners to “master” each component can be allocated and is highly dependent on the context and resources available. Sequencing should be informed by both the experiences of similar programmes, and best practice in learning and teaching. Curriculum plans should be flexible, allowing for revisions through ongoing learner, teacher, institution and professional feedback. In addition to the curriculum plan, a course syllabus will need to be developed, where content can be organized and described in greater detail. Course syllabi enable learners to understand what they can expect from the course, and what is required of them.

5.4 Assessments

Assessments are a critical component in competency-based education. All competencies and activities that have been aligned to learning outcomes, should be assessed.

To ensure that learners and teachers are aware of what is being assessed

and how it is being assessed, assessments should be transparent, and detailed in the curriculum. Assessments should be considered after developing the learning outcomes, which inform the design of the activities and learning programme.

Each learning outcome should be subject to a variety of assessments in a variety of formats to allow for numerous multiple opportunities for evaluation. The variety of formats can include the use of simulated clinical conditions and/or actors, to assess learners in close to real-world scenarios. Table 4 gives an example of the programme learning outcomes assigned to different assessment methods. Note that the learning outcomes and assessment types presented are examples only; they are not applicable to all contexts, nor is the list exhaustive.

Table 4. Example of programme learning outcomes assigned to different assessment methods

Programme learning outcomes	Assessment types								
	Written test	Practical test	Oral test	Case discussion	Presentation	Self-assessment	Peer-assessment	Observed performance	Project report
PC4.1.1 Describes the potential role of personal, environmental and health factors in impacting vision	x	x		x	x				
PC4.1.2 Compiles a problem list that captures personal, environmental and health factors specific to a person and their family	x	x					x		x
PC4.2.1 Engages in a joint problem-solving discussion with a person and their family		x				x		x	
PC4.2.2 Identifies a range of potential solutions to optimize vision by addressing relevant personal, environmental and health factors	x	x	x	x				x	x
PC4.2.3 Identifies factors that contribute to selection of the most appropriate approach for a person and their family	x		x	x				x	
PC4.3.1 Identifies different sources of information			x		x	x			x
PC4.3.2 Demonstrates the ability to manage conflicting information from different sources		x	x			x			x
PC4.3.3 Presents a complete picture of a situation to a person and their family to facilitate their optimal engagement in decision-making		x		x				x	x

Source: Adapted from the WHO *Using a contextualized competency framework to develop rehabilitation programmes and their curricula (5).*

The formative or summative nature of an assessment is another key factor to consider when choosing an assessment method. Formative assessments keep track of a learner's progress and provide ongoing feedback that both teachers and learners can utilize to enhance their learning and target any areas of need, for example, feedback on a research proposal. Summative assessments evaluate a learner at the end of a unit or module, by comparing them against a benchmark or the performance of other learners, for example, a final project or exam *(7)*.

5.5 Review by key stakeholders and peers

Review of the competency-based curriculum draft is particularly useful to ensure that the content is appropriate and addresses any gaps. In addition to the stakeholders involved in drafting the competency framework, consider expanding the pool of reviewers. For example, institutions will need to have approvals from other faculties and department heads for curricular content to be revised. This review process may take several rounds to get all the feedback circulated and changes confirmed.

5.6 Finalization of a competency-based curriculum

A competency-based curriculum can be finalized when the developers are satisfied that the objectives have been met, and that comments from the reviewers have been responded to adequately. All key components including the curricular content and specific education approaches, need to be approved by the institution. Following several rounds of review and obtaining the relevant approvals required, a final version is created.

Checklist for Stage 5

- ☐ **Have learning outcomes been developed?**
- ☐ **Has the plan for learning experience been developed?**
- ☐ **Has sequencing of the curriculum been conducted?**
- ☐ **Have assessments been determined?**
- ☐ **Have all key components, including curriculum content and education approaches, been developed?**
- ☐ **Have the feedback and changes been considered and/or adopted from the review process?**
- ☐ **Have all relevant approvals been obtained?**
- ☐ **Has the competency-based curriculum been finalized?**

Stage 6: Disseminating

The value and influence of the competency framework and/or competency-based curriculum might not be completely recognized without a strong dissemination plan. The end product needs to be promoted to ensure that potential users are aware of it. Holding launch events, promoting on social media, endorsement from relevant organizations and institutions, promoting through the established key stakeholder working group networks, are some of the ways to promote the competency framework and/or competency-based curriculum.

Once the dissemination has been carried out, try to track its effects, and evaluate and adjust as necessary at predetermined intervals, such as every 5 years.

Checklist for Stage 6

- ☐ **Is there a dissemination plan for the competency framework and/or competency-based curriculum?**
- ☐ **Has the competency framework and/or competency-based curriculum been dissemination to the users?**

Annex 1: Case studies

Case study 1: Workforce review in a hospital setting

Pilot site: Aravind Eye Care, Tamil Nadu, India

Setting	Aravind Eye Hospital (Aravind), based in Tamil Nadu, India, is a non-profit network providing eye care at tertiary, secondary and primary levels. Aravind is also a large training institute providing ophthalmology residency training, fellowship training for ophthalmologists and workforce training for Aravind's allied ophthalmic personnel (AOP). Aravind also offers several short-term skill-based training programmes for ophthalmologists, eye care managers and paramedic staff. At this site, there were existing position descriptions for all hospital staff.
Purpose	Aravind used the ECCF to evaluate the competencies of the current workforce it employs.
Applying the ECCF	**Planning** – A small team was formed, which including trainers, human resource managers and a senior ophthalmologist. **Understanding the context** – It was decided that clinical staff were the target workforce group for the pilot. Although there are several categories of staff, they were broadly classified into four occupational groups: ophthalmologists, ophthalmologist leaders, AOP and AOP leaders. Each broad group was thoroughly examined. **Using the ECCF** – Once familiar with the ECCF, the competencies and activities in the ECCF relevant to each occupational group were identified and highlighted. – The competencies of the four occupational groups were then compared with those identified and highlighted from the ECCF.
End output	The ECCF enabled Aravind to have a good overview of the level of competency found in each of their occupational groups. The end output showed that there was overall a good coverage of the competencies and activities in the current workforce.
Gaps identified	The ECCF enabled Aravind to reflect on developing the aspirational leadership qualities for each "leader" staff member. It highlighted the need to have a structured training to holistically develop an ophthalmologist or an AOP staff into a leader, particularly in the non-clinical domains such as Evidence, Community and advocacy and Professionalism.
Lessons learned through the process	Position descriptions and role responsibilities often are quite detailed. Although the ECCF presents competencies at a high level, it still allows for a thorough evaluation of competencies and activities expected from the staff. Leadership development should be considered within staff management tools, such as within key performance indicators. In addition, the ECCF can be applied more easily if it is contextualized and made simpler.

Case study 2: Development of a professional body's competency framework

Pilot site: L'Ordre des Optométristes du Québec

Setting	L'Ordre des Optométristes du Québec (OOQ), is the governing body for optometrists in the province of Québec, Canada. It oversees the qualification of optometrists and regulates practice to ensure quality of care and public protection. At this site, there was an existing competency framework, a new version of which was in the final stages of development.
Purpose	The OOQ used the ECCF to re-evaluate their existing competency framework to analyse if it reflected both current practices and best practices.
Applying the ECCF	**Planning** – A consultant was engaged to develop the OOQ's competency framework, and also to apply the ECCF. **Understanding the context** – The existing framework and guidelines were reviewed, and gaps in the current target workforce (optometrists in Québec) were identified. **Using the ECCF** – Stakeholders were familiarized with the ECCF content, and the level of proficiency within the ECCF was matched to that of the target workforce. – Relevant competencies and activities were identified and extracted from the ECCF. **Development of a competency framework** – The extracted competencies and activities from the ECCF were adapted and inserted into the existing competency framework being developed for the target workforce. – The amended competency framework was sent to relevant stakeholders (teaching institutions, regulation authorities, professional inspection) for review. – Feedback from the review was considered and included. The approach of researching best practices was used to resolve opposing feedback.
End output	An updated competency framework that better reflected best practices.
Gaps identified	The existing competency framework had limited integration of the target workforce in the health care system. By identifying these gaps and adopting relevant competencies and activities from the ECCF that addressed this, the amended competency framework can now work towards a target workforce that has better integration within the health care system.
Lessons learned through the process	Competency frameworks are often complex and challenging for people unfamiliar with them to navigate. For people wanting to develop their own competency framework, it is helpful for them to have a solid understanding of the concept of a competency framework, before embarking on developing one.

Case study 3: Development of competency-based curriculum

Pilot site: International Joint Commission on Allied Health Personnel in Ophthalmology in partnership with L V Prasad Eye Institute, Minnesota, United States of America

Setting	The International Joint Commission on Allied Health Personnel in Ophthalmology (IJCAHPO), based in Minnesota, USA, is an international non-profit organization that establishes a code of ethics and standards of competency, accredits AOP training programmes, and conducts education and training of AOP. IJCAHPO conducts global, voluntary certification programmes for AOP who are ophthalmic assistants, technicians, medical technologists and specialists for surgical assisting, ultrasound and biometry. IJCAHPO invited L V Prasad Eye Institute (LVPEI), which is a comprehensive eye health facility and training programme based in Hyderabad, India, to participate in the case study by evaluating its workforce of vision technicians and LVPEI's training programme for alignment with the ECCF. At this site there was an existing training programme with a curriculum.
Purpose	IJCAHPO applied the ECCF to determine two important outcomes: – The ability to adapt and align the ECCF to IJCAHPO's standards for education and training, certification and training programme accreditation of AOP. – Its adaptation for local ophthalmic practices in their training and education of their eye care team. With the ECCF, stakeholders are then provided a staffing plan to build four levels of competency and performance.
Applying the ECCF	**Planning** – The ECCF was reviewed to determine the design of the pilot study. – The core components for the training programme required for the pilot were identified. This included an international curriculum, certification and examination of content domains and accreditation standards. – IJCAHPO identified an AOP training programme at LVPEI (study site), which had a comprehensive international curriculum and is internationally accredited. In addition, students from the training programme completed the IJCAHPO certification examination. – A communications structure was developed within the core pilot group at IJCAHPO and the study site at LVPEI, to ensure there was regular communication. **Understanding the context** – An evaluation and alignment with IJCAHPO's standards for the international AOP curriculum, certification of content domains and training programme accreditation, was conducted. **Using the ECCF** – Comparisons were made between the ECCF with IJCAHPO's core components of international curriculum (learning outcomes and programme modules), certification and examination of content domains, and accreditation standards (programme assessments). – A template (Table A1) was created to capture the key elements of the training programme and the curriculum, including the learning outcomes, programme modules and assessments, which were then aligned to the ECCF. The template requires the ECCF to be attached, to have a full understanding of the alignment.

Applying the ECCF (continued)

– The template was shared with the core team, including the study site, and training was conducted on how to use the ECCF to complete the template.

Table A1. Sample of the template developed by IJCAHPO

ECCF competency/ activity	Training programme: curriculum learning outcomes	Training programme: module reference	Training programme: assessment	ECCF behaviour/task level of proficiency targeted			
				1	2	3	4
PA8 Conducting eye care interventions	Describes and follows universal precautions and infection control measures	Disinfection procedures	Practical assessment, multiple choice questions				

Developing a competency-based curriculum and training programme

– Although there was an existing programme, the alignment of the programme to the ECCF allowed for a structured and comprehensive competency approach to curriculum.

– The competency-based curriculum was reviewed by peers at the study site and other core teams members. Necessary revisions were made, and after several rounds, it was finalized and shared with key stakeholders.

End output

A successful alignment of the ECCF model and the international standards for an AOP curriculum, certification examination standards and accreditation standards of an AOP training programme with an evidenced-based practice of a local AOP training programme for vision technicians.

Gaps identified

There were a few gaps between the ECCF and IJCAHPO curriculum, certification domains and accreditation standards, including:

– Evidence-based practice is more emphasized in advanced programmes (ECCF Levels 3 and 4) than in the AOP level and syllabus. This pilot study identified areas to focus on to bring evidence-based practice to the AOP/ vision technician curriculum.

– Curriculum areas that needed additional competency and course support included: quality assurance, integration of a patient-centred approach, application of a rational approach to problem-solving and decision-making, and establishment of a collaborative eye care management plan.

– Domain 6 (Evidence) of the ECCF required greater development and integration in the curriculum, particularly in the areas of strengthening research capacity in eye care, planning and implementing research, disseminating evidence, and monitoring and evaluation.

Lessons learned through the process

ECCF enabled IJCAHPO to identify the need for focus on several non-clinical aspects such as professionalism and learning at the study site which were not emphasized in the previous curriculum. In addition, the pilot made IJCAHPO recognize they could assist other organizations working with AOP to apply the ECCF to their training programmes.

Case study 4: Development of a competency-based curriculum

Pilot site: Singapore National Eye Centre

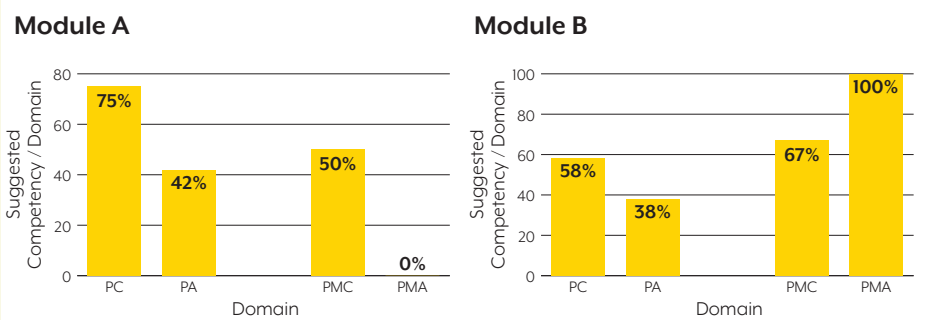
Setting	Singapore National Eye Centre (SNEC) has been operating in Singapore since 1990. It is the designated national eye centre within the public sector health care network. SNEC spearheads and coordinates the provision of specialized ophthalmological services with an emphasis on quality education and research, with a faculty of nearly 80 ophthalmologists. SNEC is part of the Singapore Health Services' (SingHealth) academic cluster of four hospitals, five national speciality centres, eight primary health care polyclinics and three community hospitals. Since its opening in 1990, 10 subspecialties have been established to provide a full range of eye treatments from primary to tertiary levels for the entire spectrum of eye conditions. Ophthalmic education is a key pillar of SNEC's strategic focus. As the national eye centre, SNEC trains one in two ophthalmologists in Singapore and beyond teaching, it drives education research and faculty development through collaborations with academic institutes. In addition, SNEC has a wide range of training programmes and continuing education programmes that train a diverse eye care workforce within SNEC and further afield. The key focus of SNEC programmes is on developing ophthalmologists, ophthalmic nurses and AOP. At this site there was an existing training programme with a curriculum.
Purpose	To apply the ECCF to an existing training programme, enabling the benchmarking of the selected curriculum against the ECCF.
Applying the ECCF	**Planning** – The pilot and ECCF were introduced to the executives of SNEC to gain approval. Once approved, a team was set up to carry out the pilot of aligning the ECCF to the training module. **Using the ECCF** – The key components (competencies, activities, knowledge and skills, and respective levels of proficiency) from the ECCF relevant to the training programme were identified and extracted. **Development of competency framework** – The extracted key components were adapted and revised to capture localized context and practice, and an adapted SNEC version of the ECCF was drafted. **Development of competency-based curriculum** – Existing resources and learning outcomes were aligned to the extracted key components for each domain, enabling any learning gaps to be identified. A table was used to identify areas covered (Table A2). – The results of the learning gaps were presented in percentages (Fig. A1), and these gaps facilitated a review of the training programme to improve current resources. – Feedback from relevant stakeholders was gathered on adaptation and improvements made.

Applying the ECCF
(continued)

Table A2. Sample of the template developed by SNEC. Note the columns in the table extend to cover each of the six domains (the sample shows only the Practice domain)

ECCF domains		Practice domain competency (PC)		Practice domain activity (PA)	
Learning programme: module reference	**Estimated learning duration**	**Behaviour**	**Level of proficiency (1–4)**	**Task**	**Level of proficiency (1–4)**
Learning outcome 1	10 hours	PC1.1	Level 2	PA1.1	Level 1
Learning outcome 2	5 hours	PC1.2	Level 1	PA1.2	Level 2
	Total learning hours	Sum for all behaviours		Sum for all tasks	

Fig. A1. Percentage of learning gaps identified in the existing curriculum (learning module A and B) after it was mapped against the ECCF



End output

The adapted ECCF will continue to be applied for other training programmes that cover the spectrum of regulatory skill requirements for each eye care professional role.

There is potential for the adapted ECCF to be used for advocacy at the ministry/policy level, and other workforce areas such a service delivery facility at local and regional hospitals. By mapping out the domains and competencies of each job role and a corresponding education/development plan together with human resources, whether the eye care system has adequately developed relevant professionals of appropriate breadth and depth of expertise to deliver eye care as a system can be identified.

Gaps identified

Application of the ECCF to the training programme has enabled the identification of certain competencies, knowledge and skills to be further developed, particularly in the areas of professionalism and self-management.

Lessons learned through the process	– To consider the learning goals/objectives of the programme, as not every competency and activity may be relevant, for example, leadership competencies for a basic programme. – To involve various content experts, pedagogy specialists, faculty, programme directors and learners in the designing and/or review of the programme while applying the ECCF. – To maintain an iterative process when designing the programme/curriculum using the ECCF, including review, monitoring and evaluation of outcomes to garner feedback from all stakeholders, and then return to improve the curriculum. – With existing programmes, it may be easier first to adapt the ECCF and then apply it rather than trying to apply an existing training programme to the full ECCF. – The ECCF serves as a reminder that non-clinical aspects of the programme are equally important to ensure the holistic development of an eye care professional. This will enable the professional to practise at an expert level at their own tasks and allow the eye care system to work synergistically. Thus, the ECCF gave a broad overview of the different skills required for the eye care system; for example, how various professionals have a role to play – from doctors such as non-specialists, junior and senior specialists/ subspecialists, nursing, allied health professionals to optometrists, orthoptists, pharmacists, technicians, social workers, leadership/ management and information technology. Each role brings its own strengths particular to its job scope and working together will deliver effective eye care. – The ECCF can be a useful tool: – for novice training programme designers to refer to when planning a programme; – to "standardize" training programme development to ensure minimum standard; and – for education committees within an institution to review and identify gaps across training programmes (both new and old).

Annex 2: Competency framework template

Competency	Knowledge and Skills	Behaviour level x	Behaviour level x	Behaviour level x

Activity	Knowledge and Skills	Activity level x	Activity level x	Activity level x

References

1. Health workforce policies in OECD countries: right jobs, right skills, right places. OECD Health Policy Studies. Paris: Organisation for Economic Cooperation and Development; 2016.
2. Universal health coverage (UHC). Geneva: World Health Organization; 2022 (https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc), accessed 13 September 2022).
3. Van Melle E, Frank J, Holmboe E, Dragone D, Stockley D, Sherbino J et al. A core components framework for evaluating implementation of competency-based medical education programs. Acad Med. 2019;94(7):1002-9 (https://journals.lww.com/academicmedicine/Fulltext/2019/07000/A_Core_Components_Framework_for_Evaluating.34.aspx, accessed 13 September 2022).
4. Global competency and outcomes framework for universal health coverage. Geneva: World Health Organization; 2022 (https://apps.who.int/iris/handle/10665/352711, accessed 13 September 2022).
5. Using a contextualized competency framework to develop rehabilitation programmes and their curricula. Geneva: World Health Organization; 2021 (https://apps.who.int/iris/handle/10665/339205, accessed 13 September 2022).
6. AlAmodi, AA, Abu-Zaid, A, Eshaq, AA, Al-Kattan, K. The Summer Enrichment Program: a multidimensional experiential enriching experience for junior medical students. Am J Med Sci. 2018;356:185-186.
7. Lockyer J, Carraccio C, Chan M-K, Hart D, Smee S, Touchie C et al. Core principles of assessment in competency based medical education. Med Teach. 2017;39(6):609-16.

World Health Organization
Department of Noncommunicable Diseases

20 Avenue Appia
1211 Geneva 27
Switzerland

https://www.who.int/health-topics/blindness-and-vision-loss

World Health Organization

9789240061422