

Innovating Optometric Education: A Comprehensive Approach to RGP Contact Lens Teaching and Learning

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Background

Optometry students acquire their rigid lens knowledge mainly through lectures and clinical practices. This heavily peer-dependent model lacks flexibility and limits the learning experiences of students as they can't try out an excessive number of lenses on a single subject's eye. Fitting simulation through corneal topographers could potentially reduce peer dependency, but discrepancies between simulated fitting and actual lens in-situ performance are often noted, due to factors like eyelid position and tension, blinking, and tear quality.

Purpose

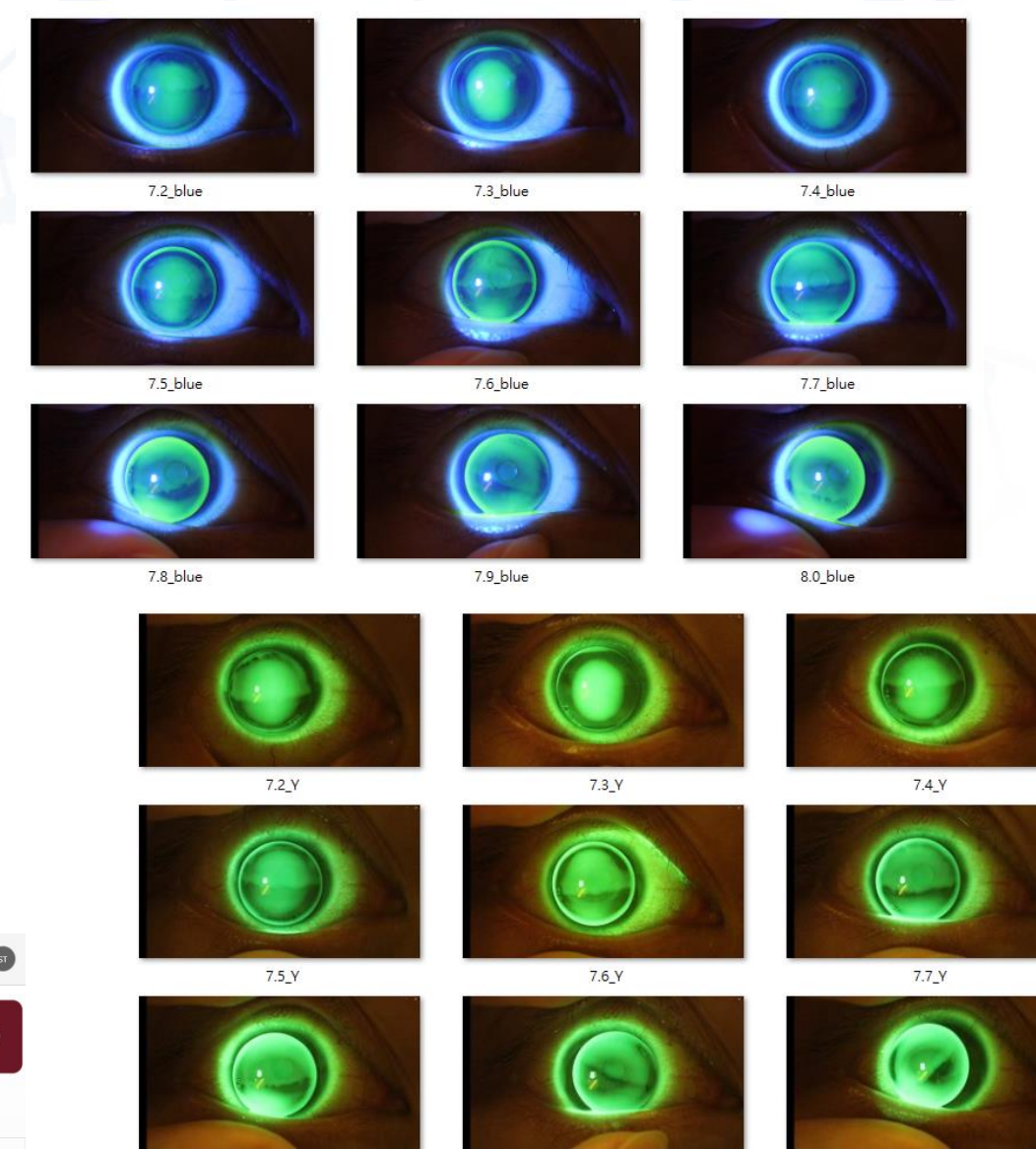
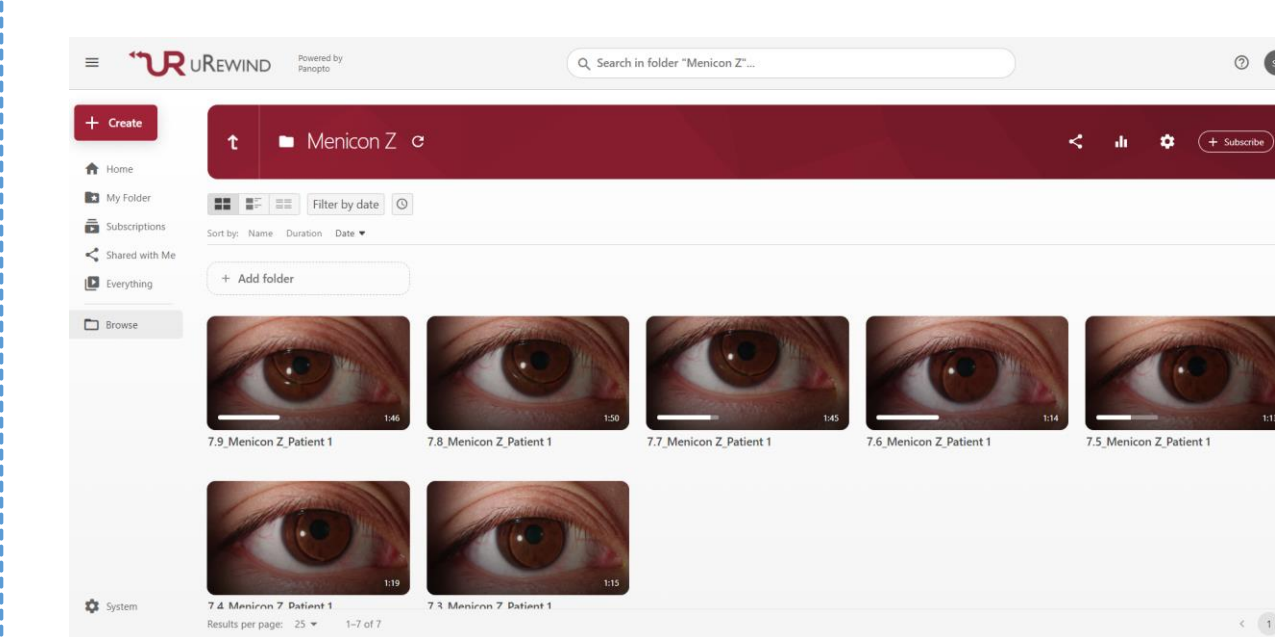
To facilitate effective learning of rigid gas permeable (RGP) contact lenses, an interactive web-based rigid lens learning platform has been developed accordingly, allowing students to interactively explore the in-situ performance of an RGP lens with varying lens parameters, and learn from fitting advice offered by experienced contact lens practitioners.

Methods

Content development

Three healthy myopic eyes, with 1.06D, 3.20D, and 6.33D WTR corneal astigmatisms respectively were selected for fitting with RGP lenses of different designs and parameters. If spherical lenses failed to achieve an optimal fit, subjects were fitted with bi-toric lenses.

All lens-fitting performances were documented using videos and photos. These real-life dynamic and static fits were graded and commented by five experienced RGP practitioners, and this data was integrated into the platform.

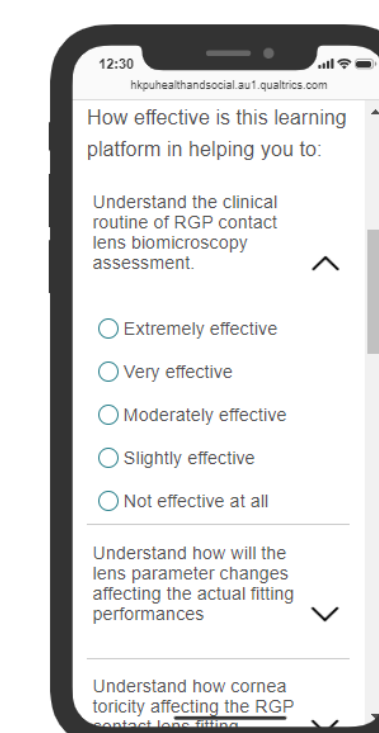


[Fig. 2] Documentation of the dynamic and static fitting performance of RGP lenses with different lens parameters

Evaluation

To assess the platform's efficacy in improving students' learning compared to traditional teaching alone, two quizzes on lens-fitting grading using recorded videos were given to students following didactic teaching, with and without platform use.

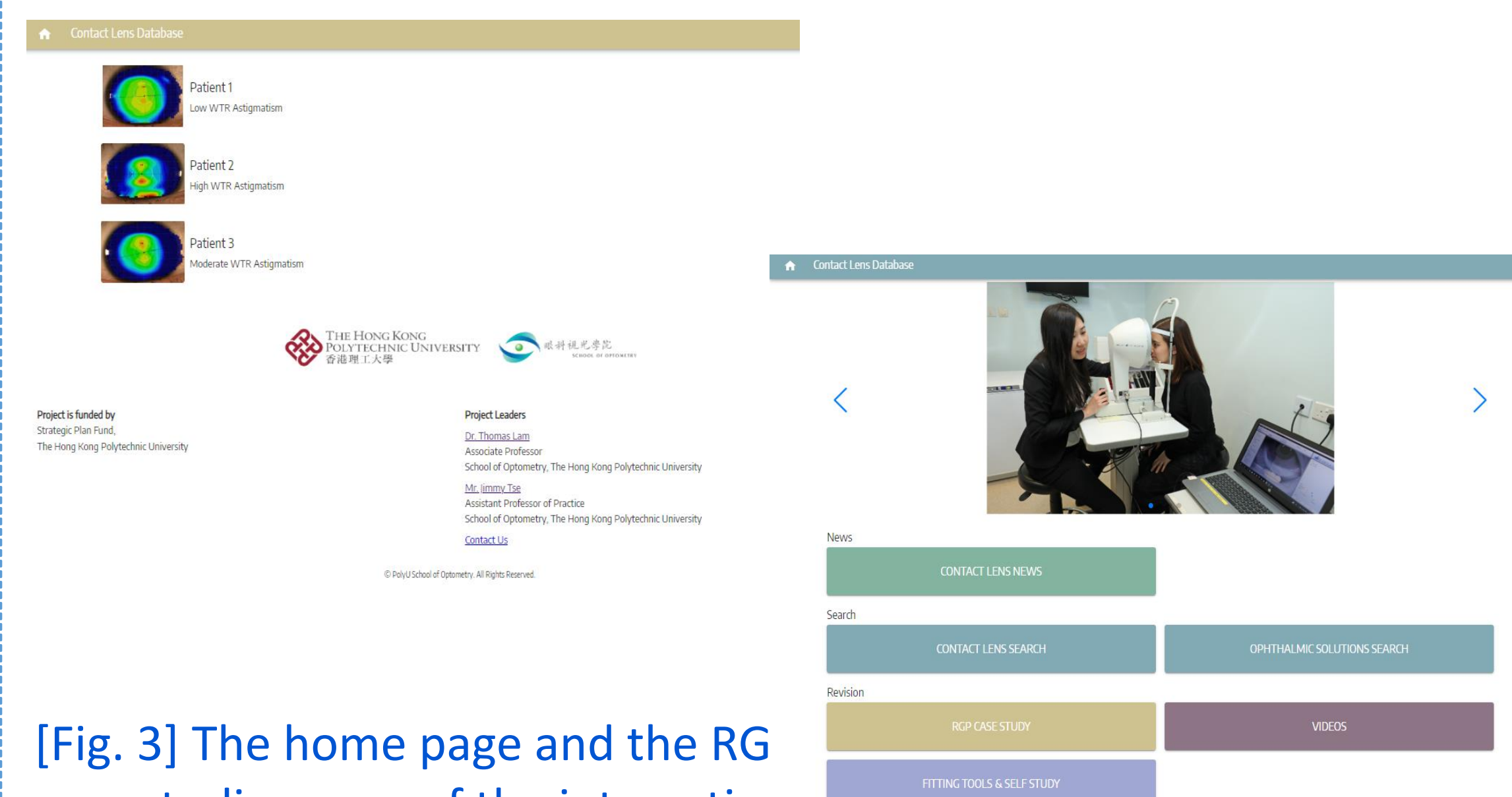
Student feedback was also collected via questionnaires.



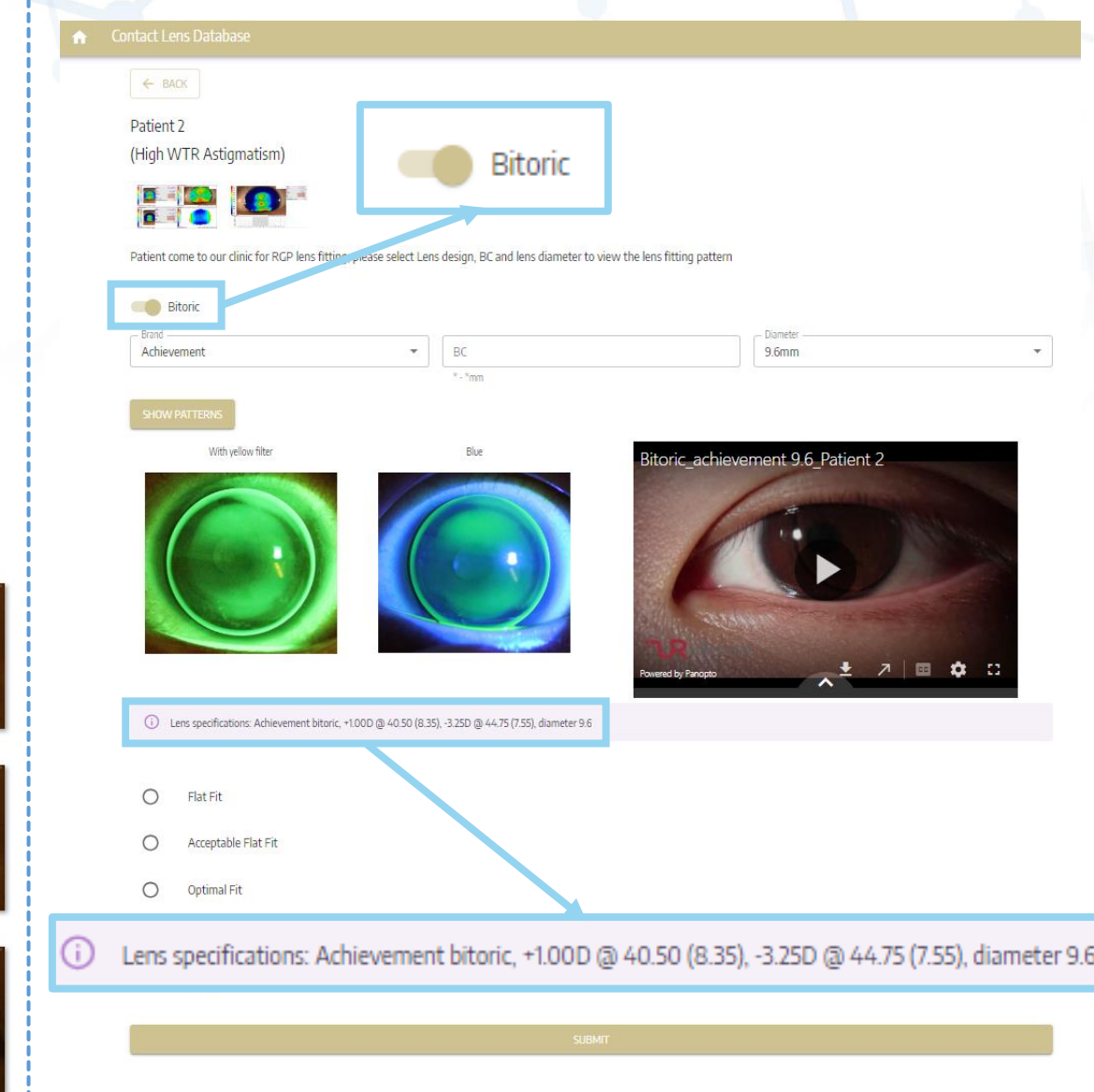
[Fig. 6] Student feedback questionnaires for project evaluation

Results

A total of 126 dynamic fitting videos and 372 static fitting photos were incorporated into the platform.



[Fig. 3] The home page and the RGP case studies page of the interactive web-based rigid lens learning platform



[Fig. 4] The fitting of bi-toric lens is also available if spherical lenses fail to achieve an optimal fit

Interactive case studies allow students to select and observe the fitting performance of lenses with varying parameters during their learning process. They can then submit their interpretation of the lens fitting.

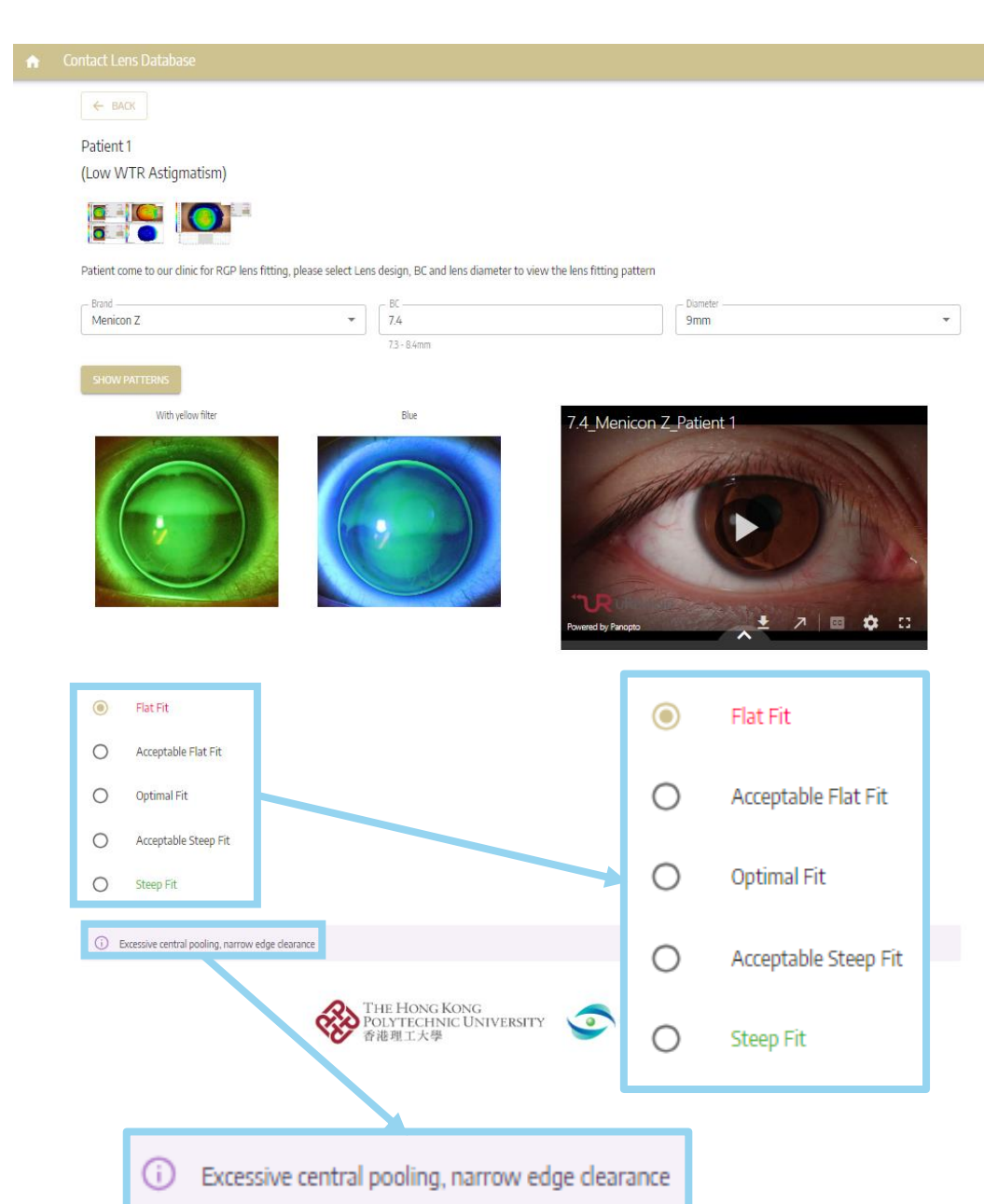
If a student's interpretation is incorrect, the system will immediately reveal the correct answer to enhance the learning experience of the student.

26 students participated in the evaluation RGP fitting comment quizzes, and 65.4% of them improved their lens fitting grading accuracy upon platform use, with a mean $19.8 \pm 26.5\%$ accuracy increase among all students ($P < 0.05$).

The evaluation was overwhelmingly positive; most of the students preferred the platform over conventional teaching alone and all of them felt the platform was valuable to their learning.

RGP lenses of 3 different designs, each with different diameters and BCs were available for students to select.

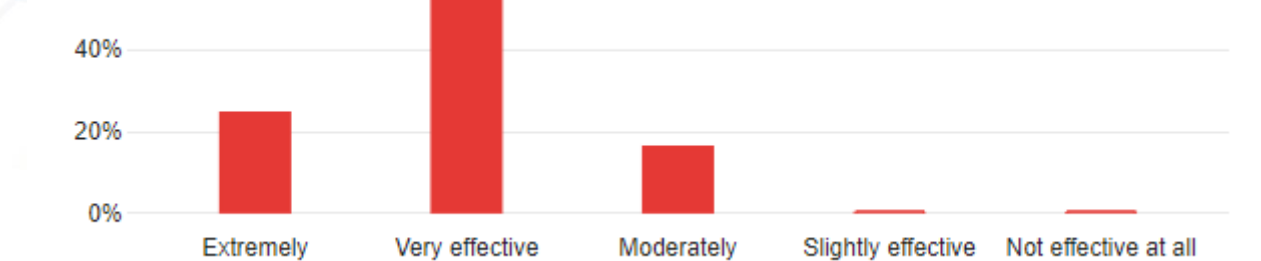
Static fitting photos for all lenses, as well as dynamic fitting videos (with the exception of some extreme fittings), were provided for the chosen lens. In cases where spherical lenses failed to achieve an optimal fit, the fitting of bi-toric lens was also available.



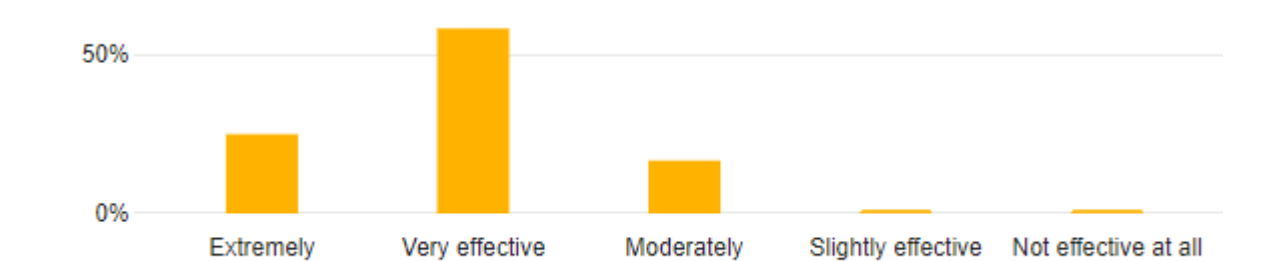
[Fig. 5] Fitting comments summarised from different individual RGP practitioners

How effective is this learning platform in helping you to:

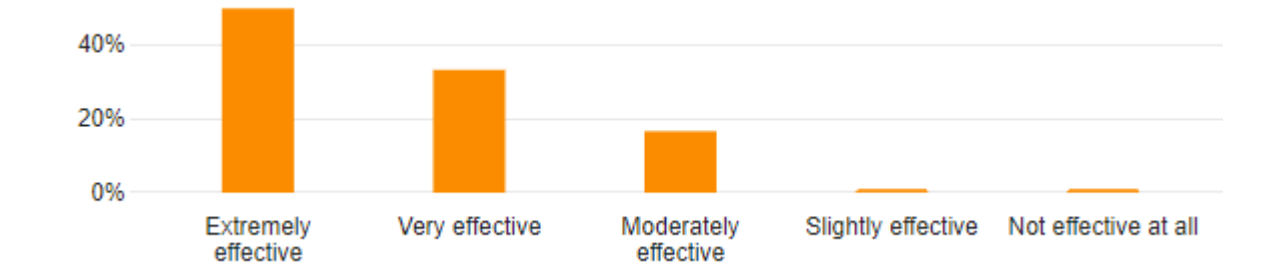
Understand how corneal toricity affecting the RGP contact lens fitting



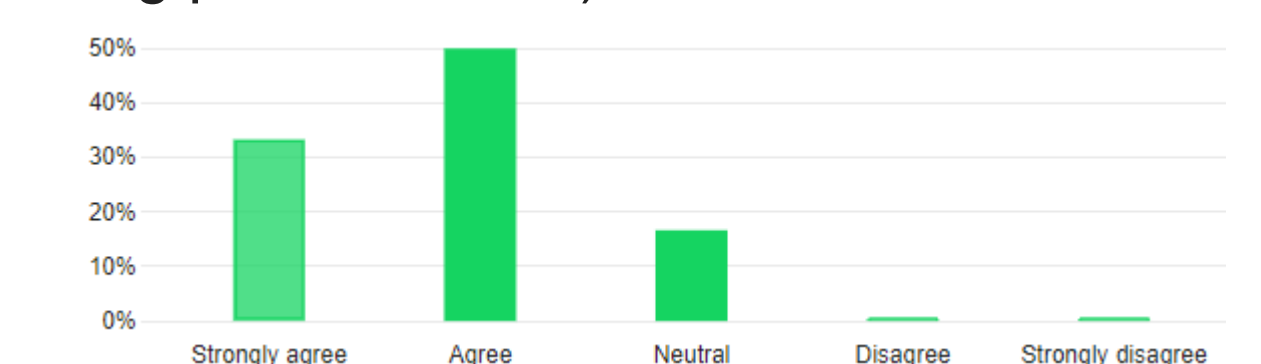
Understand the clinical routine of RGP contact lens biomicroscopy assessment.



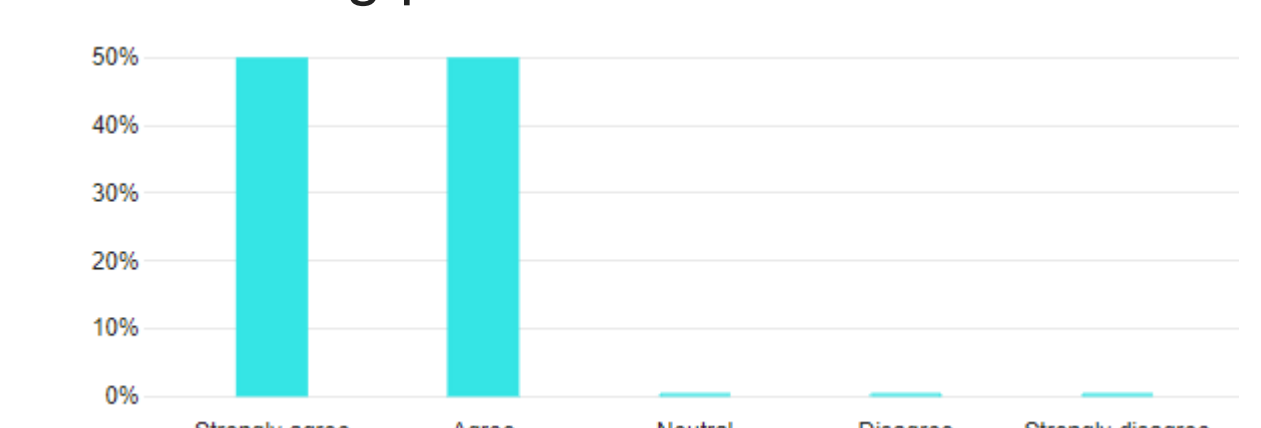
Understand how will the lens parameter changes affecting the actual fitting performances



I prefer to use this learning platform more than the conventional teaching material (e.g. textbooks, standard fitting photos, videos of standard fitting performances).



Do you find this learning platform valuable?



Conclusion

The developed platform is an effective tool in rigid lens teaching and learning. This **Open Educational Resource** offers the versatility to be adapted as a **useful RGP learning tool** for **other institutions**.

Acknowledgement

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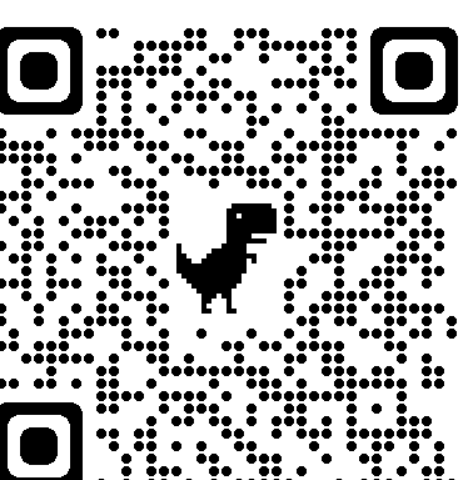
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Disclosure:

The author does not have direct or indirect proprietary interests in any products mentioned in the poster



[Fig. 1] Corneal topography for subjects with (A) 1.06D, (B) 3.20D, and (C) 6.33D WTR corneal astigmatisms