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Title	Optimising e-portfolio marking strategies
Type	Article
URL	<a href="https://clock.uclan.ac.uk/id/eprint/50119/">https://clock.uclan.ac.uk/id/eprint/50119/</a>
DOI	<a href="https://mededpublish.org/slides/13-179">https://mededpublish.org/slides/13-179</a>
Date	2023
Citation	Collin, Catherine, Lovell-Patel, Rupal and Long, Alison (2023) Optimising e-portfolio marking strategies. MedEdPublish. ISSN doi: 10.21955/mep.1115363.1)
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# Optimising e-portfolio marking Strategies

To improve validity, reliability, fairness  
and time efficiency

Where opportunity creates success

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# Disclosure Statement

There are no conflicts of interest to declare  
No funding was received

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## BACKGROUND

- Portfolios are commonly used in healthcare education
- Shift towards digital solutions
- Aligning e-portfolios with competency frameworks
- Portfolios may contain: skills, experience, reflections & practice based assessments



## WHY USE AN E-PORTFOLIO?

- Allow learners to showcase their experience and learning journey
- Permit longitudinal tracking of student progress
- Integrate multimedia elements
- Improved feedback and communication between students and educators
- Demonstrate achievement of learning outcomes through evidence



## E-PORTFOLIO MARKING STRATEGIES:

- Analytical or holistic
- Viva/oral examination
- Random selection of entries
- Student selection of entries
- Longitudinal
- Evidence based assessment mapped by student
- Multiple markers to average out scores
- Combination of marking strategies



## E-PORTFOLIO MARKING

- Rubrics and clear assessment criteria
- Balancing Reliability and Validity
- The large volume of information contained within portfolios makes them onerous and difficult to mark and present challenges in marking consistency.





## STUDY

- To Investigate different e-portfolio assessment strategies in a first year post-graduate Optometry programme.
- Different sampling intervals were used
- An independent marker assigned scores based on the student's content & reflection





## SUMMARY OF WORK

- 2 cohorts of post graduate optometry student portfolios (n=34)
- Analysed retrospectively by a researcher with no prior knowledge of the student's work
- A marking rubric with 10 domains was developed

Overarching Marking Rubric	Grade
Range of experience	0 - 10
Empathy & professionalism	0 - 4
Evidence of Self-directed study	0 - 4
Critical thinking & application of knowledge	0 - 4
Reflection on progress & action plan	0 - 4
Evidence based practice & quality of evidence	0 - 4
Discussion of cases from practice	0 - 4
Evidence of good communication skills	0 - 4
Evaluation of feedback	0 - 4
Portfolio written prospectively	0 - 4

## RUBRIC EXAMPLE

Mark (0-4)	0	1	2	3	4
Evidence of self-directed study undertaken	No evidence shown	Minor references to previous/current work (lectures/assignments etc)	References previous/current work done and some evidence shown of further learning.  Starts to apply learning to current situation.	Shows revisiting of previous work as well as wider, more in depth and relevant learning.  Applies learning to current situation.  Need for further learning might be identified.	Multiple references made to self-directed study and application to current case.  Additional reading specified with specific and relevant application to current situation.  Specific further learning might be identified and a learning plan mentioned.

## SUMMARY OF WORK

- Each portfolio consisted of an average 5 entries per week across 2 semesters
- The portfolios were marked from the longest interval to every week.
- Student order was randomised
- Progression of marks over time was also investigated

frequency of evaluation & number of weeks (randomly assessed)
1 week every 3 months
2 weeks every 3 months
4 weeks every 3 months
6 weeks every 3 months
1 week every 1 month
2 weeks every 1 month
3 weeks every 1 month
Weekly

# INITIAL RESULTS:

Interval vs marking every week N=34	1 week every 3 months vs weekly	2 weeks every 3 months vs weekly	3 weeks every 3 months vs weekly	6 weeks every 3 month vs weekly	1 week every month vs weekly	2 weeks every month vs weekly
Range of experience	P 0.00	P 0.00	P 0.002	P 0.672	P 0.052	P 0.359
empathy	P 0.019	P 0.038	P 0.00	P 0.060	P 0.003	P 0.183
Self-directed Study	P 0.003	P 0.006	P 0.001	P 0.460	P 0.046	P 0.743
Critical thinking	P 0.019	P.000	P 0.060	P 0.03	P 0.05	P 0.183
Reflection	P 0.004	P 0.031	P 0.003	P 0.206	P 0.017	P 0.269
Evidence based practice	P 0.007	P 0.022	P 0.045	P 0.623	P 0.126	P 0.768
Case studies	P 0.056	P 0.013	P 0.012	P 0.574	P 0.033	P 1.00
Communication	P 0.001	P 0.241	P 0.001	P 0.295	P 0.019	P 0.101
Feedback	P 0.004	P 0.009	P 0.030	P 0.994	P 0.051	P 0.916

Non parametric Kruskal Wallis test.

If  $P < 0.05$  then a Dunns post hoc comparison was done.

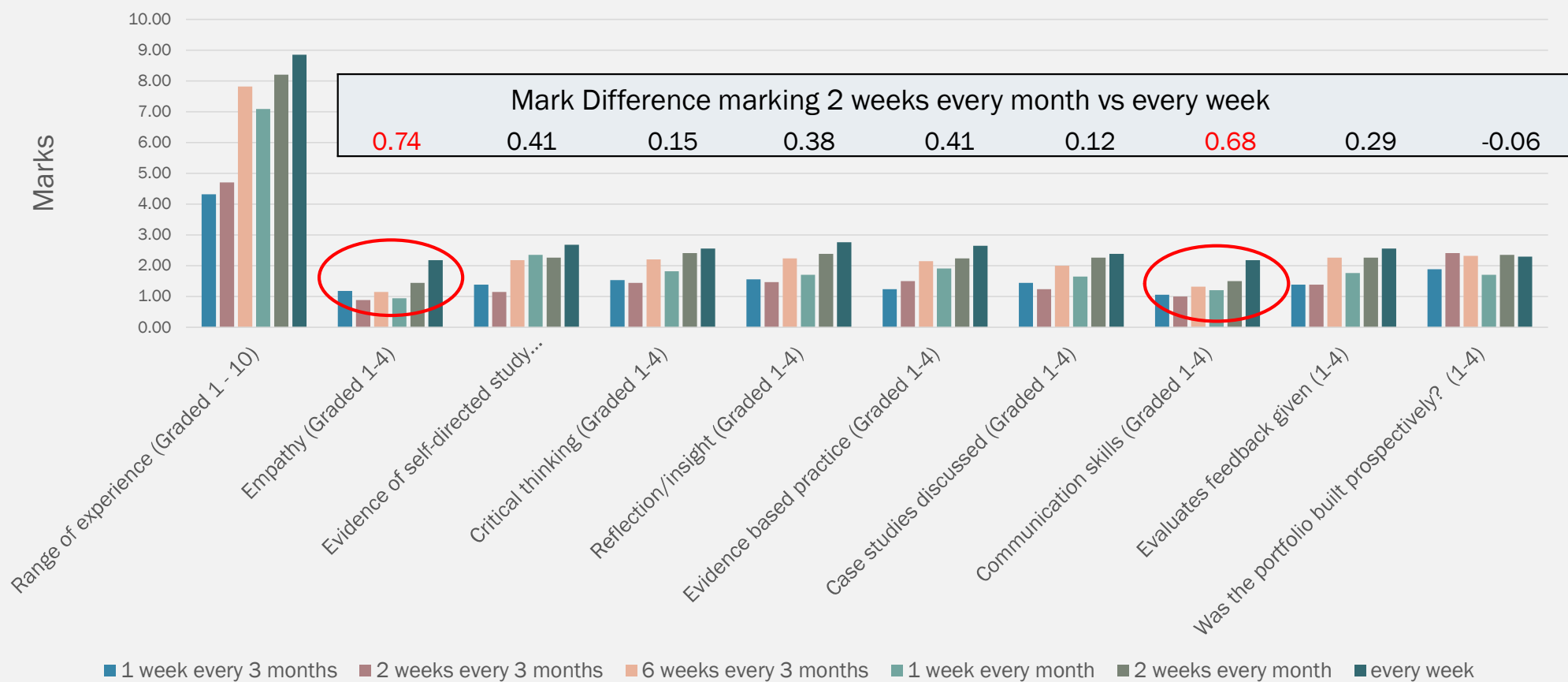
## SUMMARY OF RESULTS: MARKING INTERVALS

- Initial analysis identified that the lowest marking interval that did not impact results was to mark 6 random weeks in every 3-month period or 2 weeks every month.
- This achieved results that showed no significant difference in marks compared to marking every entry for each domain in isolation.
- Agreement was higher for clinical and practical skill domains than higher order skills.

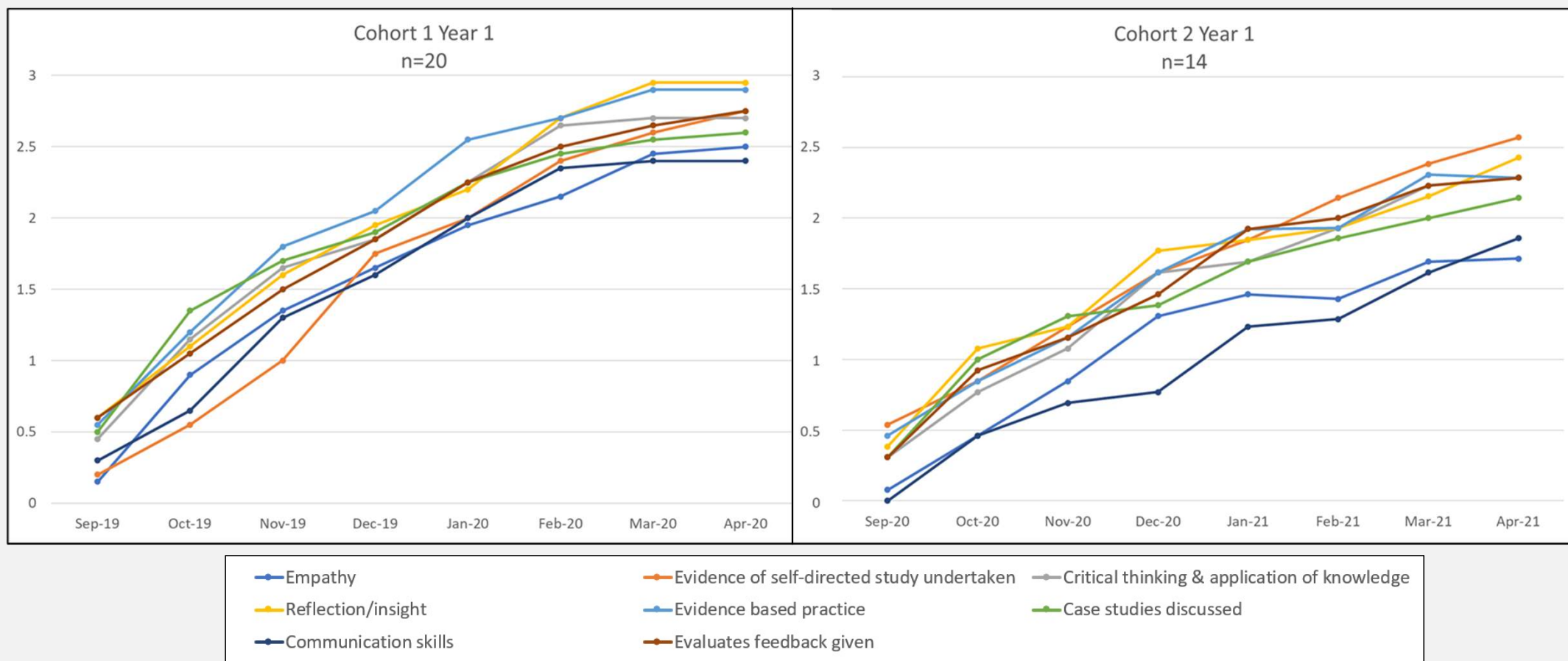


# EFFECT ON MARKING DOMAINS

Student Marks Combined by Domain



# PROGRESSION DATA





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## DISCUSSION AND CONCLUSION

- Sampling a portfolio at regular intervals can maintain acceptable levels of validity & reliability (35% - 40%\* of the total portfolio).
- Care however must be taken when assessing higher order and “soft skills” skills with more weight given to the later part of the portfolio.
- Inclusion of a global score and double marking will likely improve the validity
- Limitations: Small sample sizes, no analysis of intra-marker variability within the marking intervals or inter-marker variability.

\*The number of entries and wordcount per week were variable

## TAKE HOME MESSAGES

- E-portfolios are capable of monitoring learner's progression
- Portfolio marking should be standardised across markers using a rubric, a specified number of entries and marking intervals.
- Encourage exploration and adoption of e-portfolio marking strategies
- The optimal marking interval will likely be determined by the domains, size and complexity of the portfolio.



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# Thank you

# Question & Answers

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