

COVID-19 Ad-hoc Remote Learning – Quality Assessment, “Seven Stars” Analysis and Lessons Learned

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Abstract— This paper presents a novel metric to assess remote learning. It demonstrates an analysis of 4000+ hours of Nile University in addition to 15,000+ hours of YouTube courses. The results validate the requirement of training of remote learning delivery. It also evidences the lack of ILO alignment between the Courses and the programs.

Keywords— seven stars rating, remote learning, eLearning, ad-hoc remote learning.

I. INTRODUCTION

COVID-19 epidemic creates scenarios where students and instructors, or resource, are not physically collocated in a traditional classroom environment. Learning and education activities are relayed through technology, remote access, discussion boards, video conferencing, and may be online assessments.

The variability of engagement is a major concern as remote learning may exacerbate social inequalities [1], [2] Students from lower socioeconomic are less likely to have online classes from their schools than their peers from higher socioeconomic backgrounds (~32% compared to ~43% for primary, ~40% compared to ~58% for secondary) [1]. Digital technology is not available to all students. In addition, students may be deprived from access due to financial or location limitation. Members with limited access to digital technology or from lower-income families are less likely to engage with remote learning [1][3]. More generally, the scale and duration of school closures are unprecedented, and the potential short- and longer-term consequences for all students is a concern. The model of remote education is predicted to stay beyond the virus era [4].

School closures disadvantage children’s educational and social development [5]. School narrows these gaps but the gap widens over the long summer holiday [6]. There is a danger that these school closures could reverse this progress, with the median estimate indicating the gap could widen by 36% [7]. The period between Key stage 2 (aged 7–8 years) and Key stage 4 (aged 15–16 years) is identified as a crucial time to ensure that higher-attaining students from lower socioeconomic backgrounds remain on the high achievement trajectory [8].

The quality of the learning experience will have varied. In a teacher survey on March 22, 2020, 6360 teachers responded to indicate that for state primary schools; 51% would be teaching using an online digital platform, with 49% using take-home physical worksheets or books. At state secondary, this was 82% and 19% respectively [9]. Lack of access to computers, books, learning space or other enriching opportunities create a home learning environment

that is less conducive to learning [10][11][12][13]. Governments have plans to provide laptop computers to students from disadvantaged backgrounds [14][15][16][17][18][19][20] A survey of 1784 children in China after home confinement for a month found that 22.6% reported depressive symptoms [21], higher than previously identified (17.2%) [22]. Up to 40% of children receive special educational needs and disability support at some point across the child life course [23]. Social isolation, increased stress on parents and caregivers, uncertain access to food and housing, loss of financial income or support and worries about making ends meet may carry higher risks for child abuse [24]. The lack of outside contact with teachers, healthcare professionals and social workers, raises the risk of missing opportunities to identify early signs of the need for safeguarding [25][26][27][28]

Frameworks for eLearning quality has been proposed [29] including many assessment for online eLearning [30][31][32][33][34][35][36]. However, none of them produces a framework to analyze or assess the ad-hoc learning. The adhoc remote learning produces an environment with a unique opportunity to collect recording of all courses, labs and learning pieces. These recordings allow the implementation of a model and metrics to measure the quality of the learning along with a set of tools to automatically assess the Quality of the learning records. Furthermore, to assess the quality of learning offered to achieve the Intended Learning Outcomes (ILO).

This reset of this paper is structured as follows: Section II demonstrate the proposed metrics to measure the quality of the online education. Section III shows the prototype and the results. Section IV concludes this paper.

II. THE PROPOSED 7 STARS

The metrics is combined as a rating to quality the content quality and its appropriateness to different types of audience, students and learners The model and metrics presents the following has seven groups of quality measures as shown in Figure 1 and Each group of a set of hierarchical quality measure.

Star 1 - **Fidelity**- measures the quality of the organization of session.

Star 2 - **Visual** - measures the visual quality and its visual contents.

Star 3 - **Audible** - measures the quality of the Audio at the receiving end.

Star 4 - **Delivery** – measure the quality of delivered contents where several parameters corresponding to the target pedagogies.

Star 5 - **Engagement** - measure the engagement level of the content and delivery to promote learning.

Star 6 - **Content** - measures the alignment of the Learning with ILO and the education tree/structure.

Star 7 - **Interaction** - assesses the level of interaction between the Instructor and audiences to promote co-learning and engagement.

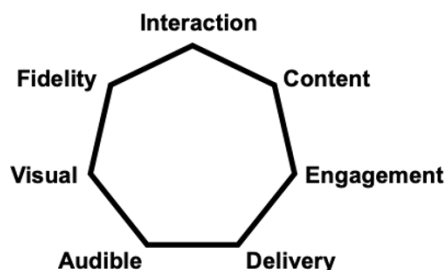


Figure 1: The Assessment models

Each criterion may have a value [0-10] Figure 2 shows a possible scale of values of a video.

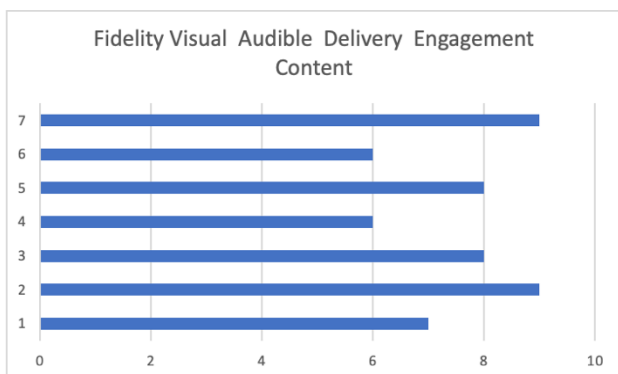


Figure 2: Samples of the Values of [0=10] for each criterion

III. PROTOTYPE AND RESULTS

A prototype has been developed and analyzed 3452 video recordings with more than 4000+ hours of learning collected through Stream of Nile University.

Quality Assessment and lessons learned with future recommendation is summarizes in the following analysis. The Maximum, Minimum, Average, Median and Standard Deviation of the 7 stars for 3542 video lectures is shown in Figure 3. It demonstrates that each star can have a value from 0 to 10. Figure 4 The distribution of the star values for 3542 video lectures is shown in Figure 5.

The range of the star values for 3542 video lectures is shown in Figure 6 The percentage of 3542 lectures with different values of Star 1, Star 2, Star 3, Star 4, Star 5, Star 6 and Star 7 is shown in Figure 7 Figure 8 Figure 9 Figure 10 Figure 11 Figure 12 and Figure 13, respectively.

The distribution of 3542 video lectures for the different values of the 7 Stars is shown in Figure 14



Figure 3: Maximum, Minimum, Average, Median and Standard Deviation of the 7 stars for 3542 video lectures

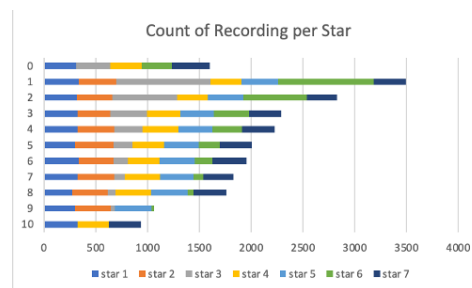


Figure 4: The percentage of the 3542 video lectures with values greater than 0

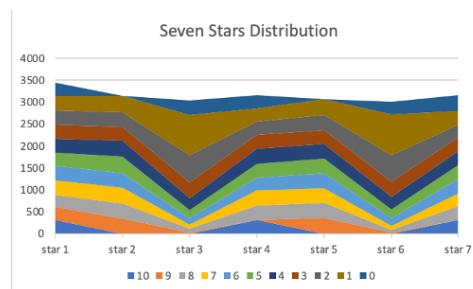


Figure 5: The distribution of the star values for 3542 video lectures

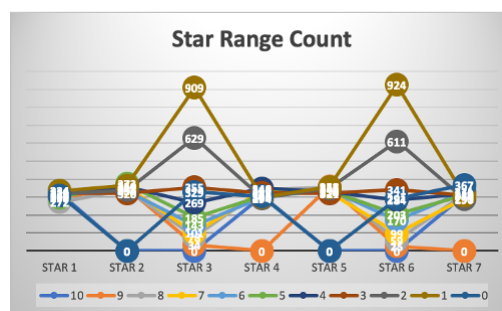


Figure 6: The range of the star values for 3542 video lectures

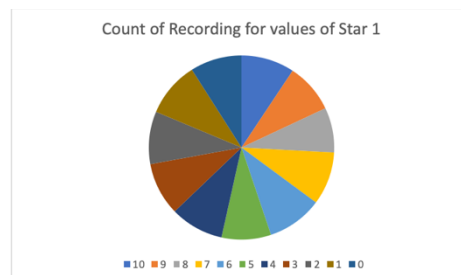


Figure 7: The percentage of 3542 lectures with different values of Star 1

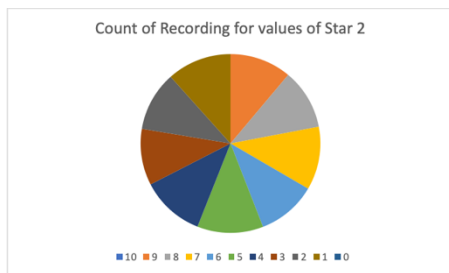


Figure 8: The percentage of 3542 lectures with different values of Star 2

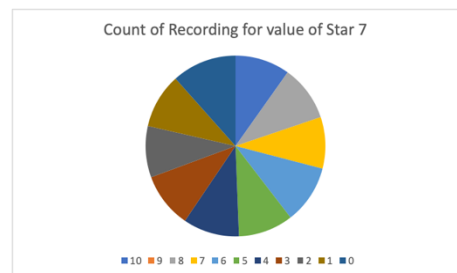


Figure 13: The percentage of 3542 lectures for different values of Star7

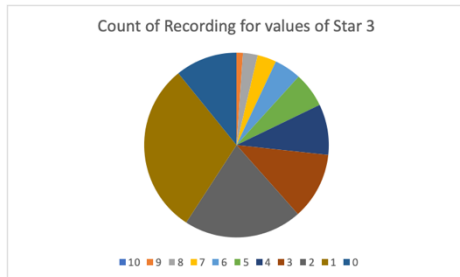


Figure 9: The percentage of 3542 lectures with different values of Star 3

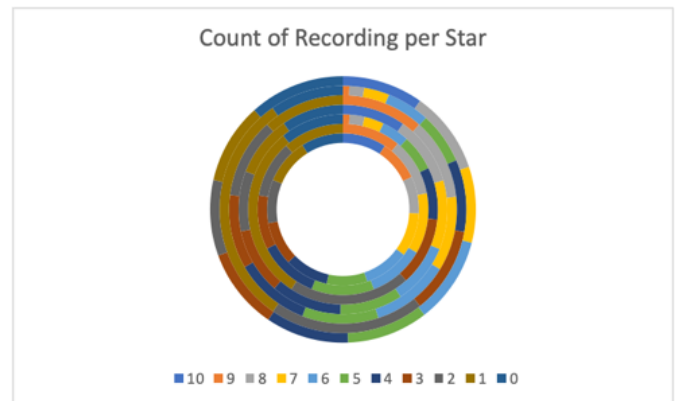


Figure 14: The distribution of 3542 video lectures for the different values of the 7 Stars

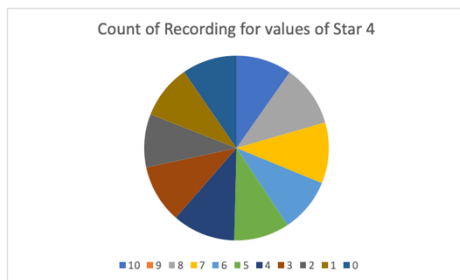


Figure 10: The percentage of 3542 lectures with different values of Star4

IV. CONCLUSION

A novel metrics is proposed to evaluate and rank remote learning session. It consists of 7 criteria where tools are used to automatically extract the rating of each session. A prototype has been developed and analyzed 3452 video recordings that consists of more than 4000+ hours of learning collected through Stream of Nile University.

Quality Assessment and lessons learned is summarized as the Maximum, Minimum, Average, Median and Standard Deviation of the 7 stars for 3542 video lectures. Each star can have a value from 0 to 10. The distribution and the percentage of the star values for 3542 video lectures demonstrate the practicality of the approach.

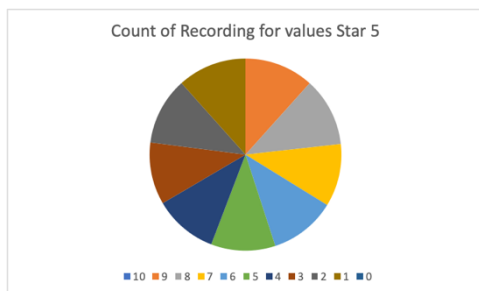


Figure 11: The percentage of 3542 lectures with different values of Star5

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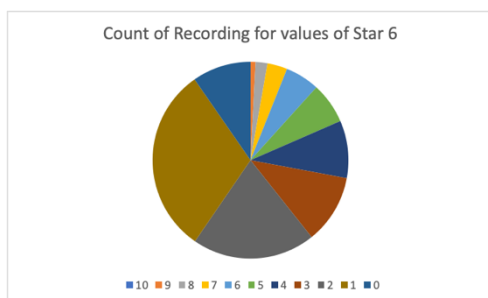


Figure 12: The percentage of 3542 lectures with different values of Star6

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