Project Proposal - EasyCog

The first HK cognitive psychological training platform designed for students with SEN

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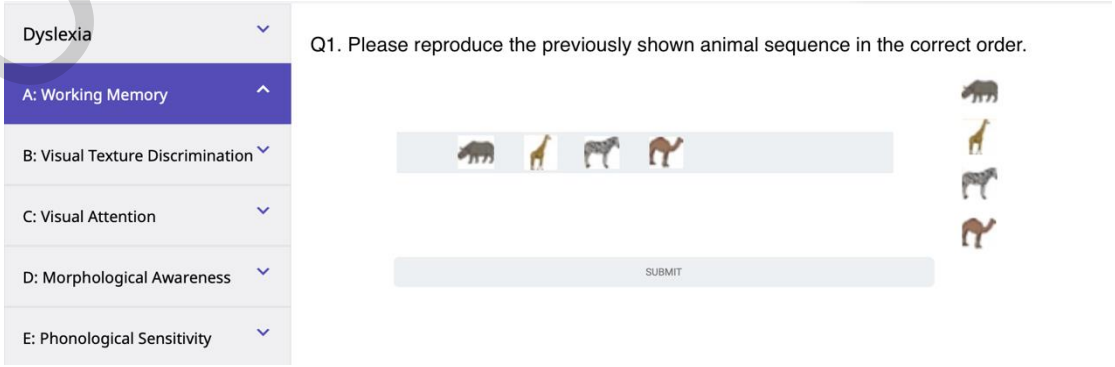
I/ Problem and Background

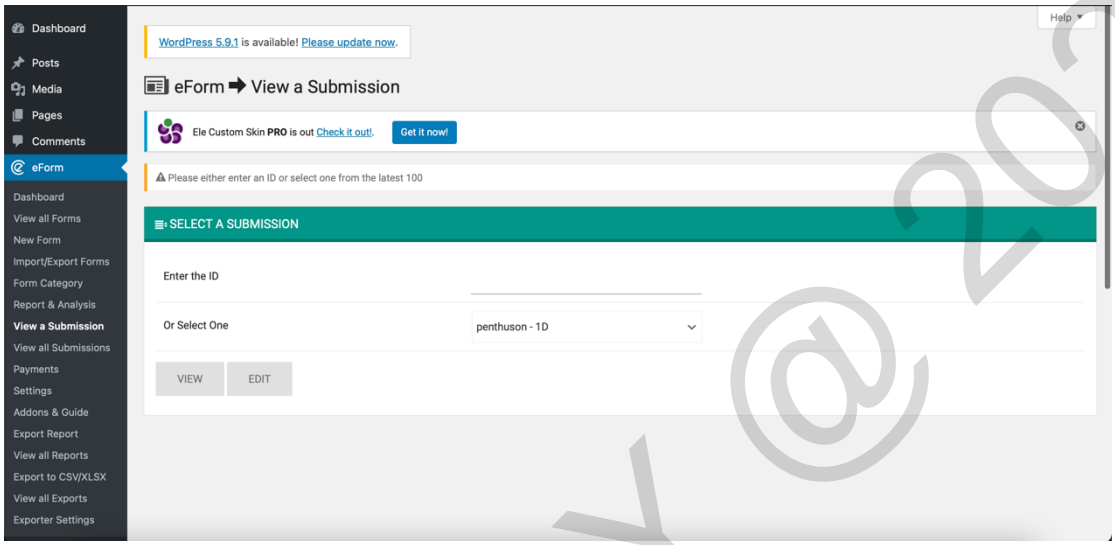
Owing to different cognitive and behavioral disabilities, the academic progresses of **students with special educational needs (SEN) usually lag behind** when compared with ordinary students, especially in an inclusive context. Although schools are aware of the issue, most of them only supplement these students with after-school tutorials. Tailor-made trainings are less likely to be possible due to the lack of resources. However, no significant improvements are found as no specific teaching methods are utilized, and individual needs are not catered. Meanwhile, some parents may not have the financial ability to seek for professional supports such as consulting an educational psychologist. Their children, therefore, have to queue for the next training session assigned by their schools. Consequently, a huge gap between ordinary students and their counterparts with SEN is observed. This situation has always been concerned and has been deteriorating during the pandemic. However, no concrete and effective solutions have been found.

II/ Solution

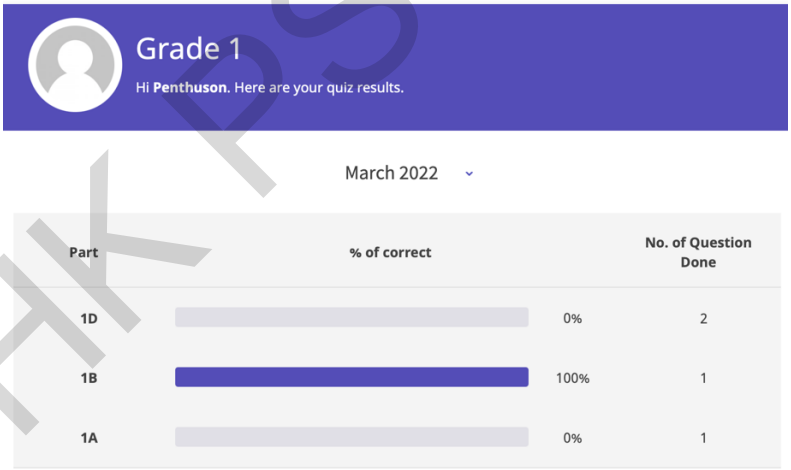
Existing studies have shown that academic performance deficits of students with SEN are resulted from their cognitive impairments. Cognitive trainings can improve their academic results with a **lower cost in time**, **money**, **and potential side-effects**, comparing to other behavioral therapies and medications. Therefore, we suggest that designing a **cognitive training platform** for students with SEN can tackle most of the fore-mentioned problems. In this online training platform, materials are designed for students in primary grade 1 to grade 6. For each grade, students will have to identify themselves with their respective SEN group (i.e., Chinese Dyslexia, AD/HD, or ASD). For each SEN group of all grades, there will be six or more cognitive training tasks that are **age-appropriate** and **focus on the respective deficits**. All of the adopted cognitive trainings can be **incorporated in the online system easily**, **without the need of additional trainers**, and have been **proven effective in previous studies** targeting the respective SEN groups (See Appendix).



With this training platform, students with diverse needs can improve their cognitive functioning and **generalize the effect to academic tasks**. Meanwhile, the online system offers everyday **take-home trainings**, and the **low price** provides more chances for students with SEN from lower-class families to access psychological trainings. As the backend of the system can also export students' individual reports for teachers' evaluation, much **less recourses are needed for schoolteachers** to supervise or design a training for their students. Therefore, **schools, parents and students** are no doubt the potential beneficiaries of the program.



Backend (upload new questions, generate reports, add users, receive payments)



Frontend individual reports (trials completed, % of correct, monthly comparison)

III/ Uniqueness and Competition

i/ First SEN-online training platform with cognitive approaches

As mentioned, online cognitive trainings are **effective, less time-consuming, low-cost, and easily accessible**. In Hong Kong, there are lots of resources supporting students with SEN provided by different NGOs or clinical centers, and some of them also provides online training. However, when comparing to our training platform, these materials are **more time-consuming,**

requiring additional human support, less focused on academic improvements, having limited training sessions and less generalized. For example, the Jockey Club Autism Support Network provides free training materials for students and parents but requires active learning and support from parents and teachers. On the other hand, the training applications from the Heep Hong Society for students with SEN are mostly focusing on behavioral adaptations or social trainings which do not improve students' cognitive and academic performances. While YWCA's Infinity Hope App is an application to provide cognitive-based trainings to Chinese dyslexics, the contents provided for trainings are limited as the tasks are story-based. All the online resources mentioned above are only designed for one type of developmental disorders, while our platform is the only online resource to provide cognitive trainings for different SEN groups.

ii/ Fine online platform bridging schools and family of students with SEN

Our platform is equipped with the e-Form module that brings **great convenience to both schools and parents**. This module allows teachers and parents to check on students' progresses, compare monthly performances, and adjust the assignment levels in school. No current applications designed for students with SEN in Hong Kong can record and export the data sets for schools for assessments. Meanwhile, once students get the account, they can get **access to the trainings covering all grades**. Therefore, they can change their training levels according to their own abilities under teachers' supervision. The flexibility makes the platform well fit to the students' progresses.

IV/ Implementation Plan

The project starts with literature research to find out possible trainings for Chinese Dyslexia, AD/HD and ASD that is proven effective, fully automatic, able to be uploaded to our systems, and cost-effective. After consultation with our project advisors, question banks will be designed and uploaded; while the system will be continually tested and modified. Once the system is ready, accounts will be created and given to the partner schools and NGOs. The timeline is shown below:

3/2022	-Literature research (Done) -Inviting advisors (Done) -System functions checking (Done)
4/2022	-Designing promotion leaflets -Rebuilding the frontend of the online platform
5/2022	-Helper recruitment -Promotion to schools and NGOs
6-8/2022	-Designing question bank -Confirmation of partnerships

	-System checking -Trials & level adjustment
9/2022- 9/2023	-Launch officially -Continuation in promotions

V/ Management Team

Our team has started a SEN music project two years ago with great success. With the **experience in providing services for students with SEN** and the **developed NGOs/schools networks**, this project can be easily promoted to different parties. The management team has also invited experts from different sectors to give advice on **project running and training designs**:

Training Designs:

- Prof. Urs Maurer (Department of Psychology, CUHK)
- Dr. Zheng Mo (Department of Psychology, CUHK)

Project running:

- Ms. Alison Mok (Educational Psychologist, HKCCCC)

VI/ Common Concerns

i/ Privacy

The privacy issue is concerned as students with SEN may not want their identity being revealed. Our website does not require any personal information, not even names. After the purchase, IDs will be given for schools to login the system, and teachers can assign the IDs to their students. They can check the students' progress from the reports exported where only ID is shown.

ii/ Potential loss

Sharing of accounts and copying of learning materials from other platforms are always the greatest threats to online learning systems. While it is important to check for their own progresses, letting others to login their accounts will interfere with their own practice results and the reports will no longer be meaningful. There is also no intention to copy the materials as this platform is provided free or at a very low price.

iii/ Motivation

At the initial stage, without enough funding, it is hard to develop the trainings in the form of advanced games which requires huge capital investment. Therefore, we aim to provide trainings in a more direct way, where these trainings will likely to be given as homework by teachers. We suggest that teachers can motivate students by awarding students with extra points or small gifts after achieving certain levels.

iv/ Effectiveness

All trainings designed are replicating the trainings that have been shown effective in academic studies. No changes will be made unless necessary, where changes will only be made after being permitted by project advisors.

End of Proposal

Appendix

Proposed trainings:

i/ Dyslexia
Working memory (WM)
Visual texture discrimination (VTD)
Visual attention (VA)
Morphological awareness (MA)
Phonological awareness (PA)
Orthographical fluency (OF)

ii/ AD/HD
Visuospatial working memory (VSWM)
Verbal working memory (VWM)
Response inhibition (RI)
Selective attention (SelA)
Sustained attention (SusA)
Orienting attention (OA)
Executive attention (EA)

iii/ ASD
Verbal working memory (VWM)
Selective attention (SelA)
Sustained attention (SusA)
Orienting attention (OA)
Executive attention (EA)
Cognitive flexibility (CF)

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