
Title	Partnering a novel "Teacher Aide"
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PARTNERING A NOVEL "Teacher Aide"

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School teachers in Singapore are not unfamiliar with having a teacher aide in the classroom. When the Ministry of Education introduced the teacher-aide scheme more than 10 years ago, teachers involved adjusted their teaching practices to harness this new partnership in teaching. Now, with the advent of smart technologies and mobile devices, teachers find themselves having to welcome a different kind of "teacher aide" into their teaching spaces

A/P Eddy Chong has developed just one such "teacher aide" for music teachers. It is not just a conventional piece of technology that "aids" students in their learning but one which comes with a certain degree of "intelligence" that enables it to co-"teach" with the classroom teacher.

Meet the new "teacher aide"

Harmonia-on-the-go is an iOS and Android mobile application that relies on such technologies to engage students in music learning. This application, funded by the Singapore Ministry of Education (EduLab project, AED 01/17 CKM), was a collaborative effort between A/P Chong and his co-PIs Mr Tan Kheng Leong and Dr Cheng Yuan Shan, as well as a collaborator from the Ministry of Education, Mrs Ee-Chek Yui Hong. It was pilot tested in four secondary schools and one junior college. The user survey feedback suggested that the application was well received by both students and teachers.

Harmonia-on-the-go empowers students to take control of their own learning as it allows them to create chord progressions, hear the results, and check to see if they have violated any of the music-grammar rules taught in class (Figure 1). The latter feedback is immediate – accessible with the tap of a button. For each round of practice, users can choose the appropriate level of difficulty



Figure 1. Students can practise using the app to create various chord progressions and receive automated feedback

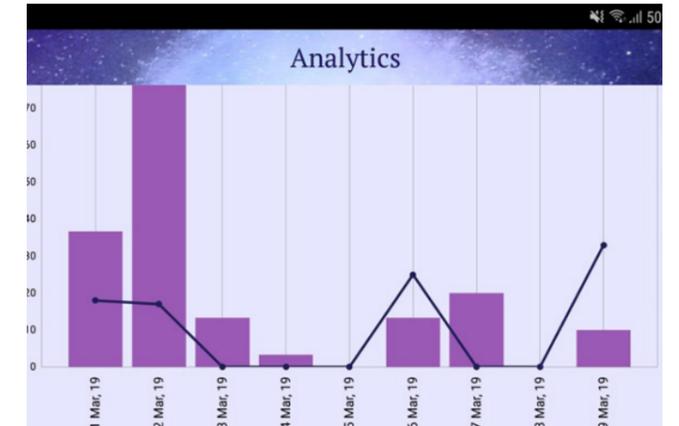


Figure 2. Harmonia-on-the-go provides learning analytics for both student and teacher

according to their stage of learning and personal learning goals. Teachers, on the other end, can prescribe and even customize the appropriate difficulty level for the students.

This app comes in both offline and online versions. Once the account is created, the registered user can obtain personal learning analytics (Figure 2) that informs them of their progress over time, such as the various types of errors (basic, intermediate or advanced) they have made. Students can also submit queries to their teacher using the "Consult" feature and receive their teacher's feedback asynchronously.

Discovering more about this "teacher aide"

Although this application is useful, it must be stated that it is not meant to replace the school teacher but to support them in their teaching. Firstly, the application does not teach the subject content to the students: the school teacher needs to first teach the students the music grammar rules and the relevant technical terms before the students have the explicit knowledge to create appropriate chord progressions and can understand the feedback statements. This app is essentially a practice app that offers students a convenient way of applying what they have been taught and receive immediate feedback.

Secondly, this "teacher aide" does not always "get it right" with its automated feedback. Whilst it has a high level of accuracy, the rule-based approach adopted for this app has its limitations because

of the complex, multi-dimensional nature of music grammar. There are times when other musical considerations mitigate an apparent rule violation.

Towards a productive partnership

Granted that the app has its limitations, such limitations can be innovatively turned into teachable moments. For example, should erroneous feedback be generated by the app and is brought to the teacher's attention by the student, the teacher can take the opportunity to explain the complex compositional considerations involved, either face-to-face or via the app's "Consult" platform. Through this process, students can develop a deeper, more sophisticated appreciation of musical rules and thereby be empowered to be creative.

For the teacher, by "partnering" this music "aide", they do not have to worry about increased marking workload should their students enthusiastically do extensive practice. Instead of being bogged down by marking, the teacher can devote more time and effort to monitoring students' learning using the learning analytics generated, and to augmenting their appreciation of music grammar through app-facilitated interaction with the students. The teacher can also provide remedial teaching or differentiated instruction, based on evidence, to meet the differing needs of students.