

Application Exercises



Introduction

In the physical classroom, the guidelines for the completion of application exercises can be printed off and distributed to each team (e.g. Franklin et al., 2016), or projected on a screen for a class to view. Teams then discuss their application exercise and indicate their decisions often using voting cards or through the creation of outputs using whiteboards, flipchart paper or some other means e.g. a drawing pin (Sibley, 2018). Whole class discussion follows.

Low tech options like voting cards, flipchart paper and drawing pins can be very easy to set up and operate for both faculty and students. However they can limit the types of application exercise that are possible to roll out. From a practical perspective they also require a lot of materials to bring to class also. Here we discuss how digital technology can be utilised to transform the type of application exercise that students engage with - and the tools that they need to use to do so.

Can technology make Application Exercises more "significant"?

As well as reduced paper usage there is scope to have higher fidelity application exercises. See TBL at Lee Kong Chian School of Medicine as an example. Video can be incorporated (and replayed by teams). Software relevant to the task can be used by teams. Students can research topics online as they discuss. Team outputs can be also be easily retrieved later on in the year when students are revising (as opposed to being discarded or lost). Some tools that enable educators and students to share application exercises include:

- **One Drive** - Teams can upload documents they have collaborated on to a shared drive.
- **Learning Management Systems (LMS)**- e.g. Moodle enable seamless sharing of exercises and team outputs (students can upload files on an LMS when they have it open in class) or use Moodle quiz.

Consider quizzing tools

Quizzing tools usually enable teams to select a response or to write short open-ended answers that can be projected onto a screen for the class during the whole class discussion phase. These can be easily stored and retrieved at a later date by teams if required. This may be useful should you wish to revise or link up different exercises from different TBL units. When paper, whiteboards, flipcharts and drawing pins are the modes used, the easy retrieval of prior teamwork from earlier sessions (for both educators and students) becomes more challenging or impossible. Four tools here include:

- **MS Forms** – Enables MCQ and open-ended questions (replicating voting cards and whiteboards)
- **Moodle**- The quizzing (and assignment) function in a typical LMS e.g. Moodle will allow teams to upload files, images, as well as show choices and provide short rationales.
- **Turning Point** - Can be used to replicate voting cards.

Consider asynchronous

In some contexts it may be feasible to have students work together outside of class time in order to collaborate on an application exercise (e.g. Palsole and Awalt, 2008; Gomez and Passerini, 2010). This may be an option should you wish for students to have time to reflect and think in the midst of an application exercise. It may open up possibilities for more "significant" application exercises (one of the 4S's) that are difficult to do in real time within a physical classroom. Tools that gives educators oversight of online team discussion and collaboration include:

- **MS Teams** – Students can share comments and work on outputs together with educator oversight
- **Moodle** - Discussion forums and Wikis can be created which are only accessible to teams and the educator



Enhance Facilitation with Visuals

When team outputs are shared on a screen rather than around the walls of a physical classroom (as per a Gallery Walk), the ability for quick and easy annotation (both in terms of text and visuals) observable by the entire class becomes a reality. Certain elements can be "zoomed in" on and students may even have the opportunity to annotate their team outputs also. A stylus, graphics pad or interactive whiteboard can help the educator to easily provide very visual feedback on team outputs which can be viewed easily from all corners of the classroom.

Open up possibilities with Online Synchronous TBL

The 2020/2021 COVID 19 pandemic required many TBL educators to experiment with remote synchronous technologies. The use of videoconferencing tools with breakout rooms and the ability to share screens can enable students to work on application exercises whilst geographically dispersed. This may be useful during times of pandemics or other emergency situations but may also open up the possibility of multi school participation within or across national borders.

Videoconferencing tools have the features which afford the possibility of remote facilitation and team collaboration i.e. breakout room functions where students can share screens. Coupling these with tools for Readiness Assurance Tests and Application Exercises make virtual Team Based Learning feasible. The following are just two tools that can be used to facilitate teams of students to work together on Application Exercises.

- **Zoom** – Students can collaborate within breakout rooms using shared screens.
- **MS Teams**- Also has the breakout rooms and share screen function.

Further Reading

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- **Palsolé, S., & Awalt, C. (2008). Team-based learning in asynchronous online settings. *New Directions for Teaching and Learning*, 116, 87-95.**

In this article, the authors discuss how they approached the development of an asynchronous TBL course. The authors discuss how they set up Asynchronous Application Exercises using their Learning Management System.

- **Gomez, E. A., Wu, D., & Passerini, K. (2010). Computer-supported team-based learning: The impact of motivation, enjoyment and team contributions on learning outcomes. *Computers & Education*, 55(1), 378-390.**

This article illustrates with a case example how authors can integrate "outside of class" activities to the Application Exercise phase.

Useful Links

- [Tools for Application Exercises - Tools to support TBL: Application Exercises - Wakelet](#)

A selection of tools which may be options during the application phase - curated by Rebecca McCarter.

What is a Wiki?

- This article from **Vanderbilt University** discusses what a Wiki is and how it can be used for asynchronous activity. These can be an option for asynchronous application exercise work.

