Using Google shared files to facilitate successful online student group collaboration

Vanessa Stafford[A]   [A]   *Academic Learning Manager, Kaplan Business School, Australia*

Abstract

With a shift to mass online learning, maintaining the benefits of traditional on-campus collaborative group work is crucial for positive learning outcomes. Observations of online classes at a higher education business college reveal the risk of slipping into online lecturing if an educator feels that online group work 'doesn't work'. This EdTech review explores Google's suite of cloud-based shared files: Docs, Sheets, and Slides, through which we can maintain quality, efficient, and effective online group work. This review presents the history of cloud-based shared files, explores Google's suite of products, discusses the importance of social constructivist online peer-peer learning, and concludes with practical shared file case studies. This review challenges the educator to be student-centred. It equips them with practical instructions to incorporate shared files into their classroom activities. It asks the educator to consider our commitment to the modern online student – to provide quality learning outcomes by implementing cloud-based shared files that improve collaborative online learning experiences.

Boring online group work does more damage than simply wasting students' time and money: it diminishes learning. With a shift to mass online learning, maintaining the benefits of traditional on-campus classroom group work is crucial for positive learning outcomes. Observations of online classes at a higher education business college reveal the risk of slipping into online lecturing if an educator feels that online group work 'doesn't work'. However, pedagogy training can improve the skills of an online educator so that effective, collaborative peer-peer learning can be maintained in the online environment. One EdTech tool an educator can learn to use is the 'shared file', which can restore those social constructivist, collaborative peer-peer learning experiences that are at risk of being avoided. 'Shared file' is a collective term for cloud-based products that allow for collaborative creation and editing of the same file, either synchronously or asynchronously by multiple authors. Google's suite of cloud-based office tools – Google Slides, Google Docs, and Google Sheets can be used in education to facilitate more effective group work – both within the online and physical classrooms. This review is directed to educators and those who train them so that practices can be improved. It provides

a history of cloud-based shared files, explores Google's suite of shared file options, discusses the importance of quality online peer-peer learning, and concludes with practical case studies of shared file activities currently in use in the higher education online classroom so that the reader can facilitate quality, collaborative, peer-peer learning today.

Cloud-based shared files began with collaborative real-time editing (CRTE), which was first seen at what is now referred to as 'the mother of all demos'. This was a game-changing computer demonstration by computer scientist Douglas Engelbart in 1968, which not only showcased the first use of a computer mouse, hyperlinks, and computer-based collaborative working (Tweney, 2008; Perry & Morphett, 2015), but even spawned a musical to celebrate the significant event (Vanhemert, 2015). Engelbart was less concerned with smart computers and more interested in how humans could use computers to work smarter, by completing routine office tasks more efficiently and effectively, including using computer-assisted colleague collaboration (Tweney, 2008). Despite this demonstration being ground-breaking, it was not until the early 1990s that the business world took up many of these cutting-edge tools on display that day, and not until the 2000s that online collaborative working entered our daily office lives through products such as Google docs and Google Drive (Perry & Morphett, 2015). Fast-forward to the present and it is fair to say that the use of Engelbart's computing tools is now ubiquitous in our personal and work lives, and computer-assisted collaboration between colleagues does indeed make us work more efficiently and effectively – from co-authoring reports to brainstorming new business initiatives.

There are many online collaboration tools available, but we will focus on Google's offerings in this review. Google shared files form part of a freemium business product: Google Docs Editing Suite. The editing suite is freely available when you sign up for a Gmail account and provides you with four products: Slides, Docs, Sheets and Drive. The additional business-centred Google Workspace offers four levels of paid product choice, catering to businesses that require ad-free use, stronger security settings, and additional products such as a custom business Gmail account, and Google 'Meet' video and voice conferencing (Google, 2021).
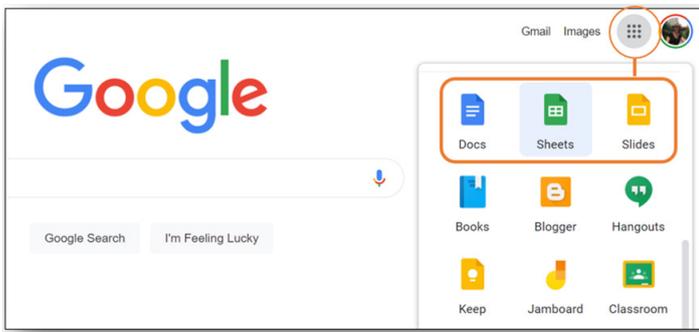
Figure 1: Google's Suite of shared file products found on the Google webpage.

Google Slides, Docs, and Sheets are comparable to PowerPoint, Word, and Excel, respectively. However, despite the advantages of the Microsoft suite (stronger word processor features and user familiarity, for example), the Google suite has some advantages over these more established office tools. For example, Microsoft products must be purchased and downloaded on your device, whereas, with Google Docs Editing Suite, these equivalent products are free and cloud-based. The latter provides more accessibility between devices: seamlessly switching from a laptop to a mobile, in either online or offline mode (Rodrigo, 2020). Another advantage is the suite's online collaboration capability. Whilst Word for example, can only recently support synchronous co-authorship of the one document and must be saved to OneDrive to allow online collaboration, Docs has been designed for this purpose and its ease of use in both sharing and synchronous and asynchronous collaborating is evident (Rodrigo, 2020). A major collaboration advantage of Docs is the assurance that your shared document can be opened by anyone, eradicating the frustration of Word users relying on version compatibility (Rodrigo, 2020).

A significant feature of cloud-based files, such as those in the Google suite, is that you need never have a physical document saved to your device. This has positives and negatives. Three positives are that your file is available from any device, as long as you have an internet connection, and that you can supply the file to others via a simple link, with easy to manage editing controls. Also, for asynchronous co-authoring of the one document, the removal of emails with version-controlled file attachments is a more efficient way of collaborating. However, one negative you may find is that if you are used to searching your work emails via the attachments filter to locate a document, you may find using cloud-based files frustrating to manage and difficult to get used to. Another negative could be found when you are simultaneously using both the Microsoft and Google suites of products for different work-related uses, due to the similarities between the offerings. This can mean that the user misses the more sophisticated features within Word, Excel, and Powerpoint, causing (perhaps unfair) frustration when using the Google products. Overall, Google shared files offer the ability to work in groups effectively and efficiently, just as Engelbart envisaged in 1968.

Students learning in groups from their peers is not new pedagogy – Lev Vygotsky's social constructivism is now ubiquitous practice in psychology and education, with the latter involving the learner actively engaging in the learning process through interaction with others (Vasileva & Balyasnikova, 2019). It is through this interaction with an educator, a peer, or a group of peers, that the learner makes sense of what is being learned (Shackelford & Maxwell, 2012). In a meta example, Vygotsky himself had a small team of collaborators who helped him develop his own original theory and who, after his death, went on to develop further theories from that initial, fruitful collaborative relationship – together, they 'made sense' of other theoretical components to develop something new (Kaptelinin, 2014). Evidence from the education world has since shown that absorbing information from multiple voices improves knowledge understanding for the learner (Shackelford & Maxwell, 2012) and leads to better academic outcomes (Northey et al., 2017), something that regular students and Vygotsky and his friends have in common.

It is not just knowledge understanding that collaboration develops. Online students say that they benefit from small group learning due to its ability to foster a stronger online community (Shackelford & Maxwell, 2012). Further, student satisfaction during peer-peer interaction can be predicted by how strong their sense of community is and stronger social reinforcement and higher quality information exchange reveals benefits for student outcomes (Shackelford & Maxwell, 2012, Salmon, 2021). Therefore, building that online social presence is crucial. However, learning from your peers can quickly turn into the dreaded 'group work', when activities are poorly designed.

The success of small group collaboration relies then on the educator providing adequate support and instruction to ensure the group actually works well together (Shackelford & Maxwell, 2012). Working together well online, though, requires thoughtful artefact design and a consideration of how humans will interact with it. Vygotsky was a mentor and friend to Russian psychologist Aleksei Leontiev, a co-collaborator on his social-cognitive theory (Kaptelinin, 2014). Leontiev went on to develop the Activity Theory, which is grounded in much of Vygotsky's work, and focuses on the relationship between subjects and objects – that is, "purposeful, transformative, and developing interaction between actors ("subjects") and the world ("objects") (Kaptelinin, 2014, para. 1). Activity Theory is the current foundation of Human-Computer-Interaction Theory (HCI), which seeks to articulate the complex, dynamic, and conflicting relationships between humans and the objects they interact with via the computer. This leads us back to discussing the importance of promoting the use of cloud-based shared files for collaborative learning. We need to understand what works and what does not work so that we can use online learning objects effectively.

Khalil's (2018) research on using Google Docs for collaborative group work shows that student attitudes to the activity were poor when a student had a lack of technological skill, and when the instructions from the educator were not clear. Research also found that online collaboration was more successful when small groups were facilitated, which reduced the negative effect of dominant voices and stopped shared file synchronous authoring confusion (Roberts, 2013). These research findings are supported by the anecdotal

complaints from educators, who may simply be ill-equipped to deliver engaging and effective group work, therefore are not providing the right scaffolded support to their students. Ultimately, if facilitated well, sharing resources creates students who are more responsible for their own learning outcomes, who increase their participation, and build stronger peer-peer relationships (Shackelford & Maxwell, 2012). Whether face-to-face or online, students using shared files can experience positive learning outcomes due to the activity's underlying social constructivist pedagogy (Northey et al., 2017).

Those online educators who believe online collaborative group work 'doesn't work' need to develop the skills required to create well-designed and well-facilitated learning activities involved in community building and topic learning (Salmon, 2021). Educators wanting to improve these skills should look to Gilly Salmon's 5-stage model for online learning, which relies on scaffolding the learners through activities that support community building (Salmon, 2021) as a precursor to content learning. One such activity may involve collaborating on a shared resource. This shared resource is understood by both Activity Theory and Human-Computer Integration Theory as being the object through which collaboration will be object-centric (Kaptelinin, 2014), playing an integral part in humans focusing together to achieve a shared outcome in an online space.

In conversations with online educators, the uses of shared file activities are varied. Many have used them in class warmers, to facilitate revision, for content learning, for problem-based-learning, and for providing students with feedback. The following reported uses is included in the hope the reader will be inspired and empowered to incorporate a shared file activity into their online classroom:

Table 1: Shared file activities, learning benefits and challenges.

Category	First class warmer
Scenario	Used in the first class as a 'what do you hope to get out of this subject?' class opinion sharing. Great for gauging the expectations of your students.
Share file usage	Create a Google Doc and paste the link (with editing access) in the chat or an email to students. The educator monitors the doc as students use the page as a virtual whiteboard to replicate the traditional 'Chalk Talk' - where students write their individual responses on the blackboard/whiteboard (Roberts, 2013). The educator can then screen share the doc as a whole-class discussion generator or simply save the data for lesson planning purposes. Note, when you are using both a platform, such as Zoom and a shared doc, many students will use the shared doc in full screen mode. Be sure to verbally bring them back to the Zoom classroom window when the activity is done so you know you have their group attention again.
Learning benefits	Educators report that it motivates students to get involved because it provides a safe space to anonymously write their thoughts about the subject, they can view their new peers' thoughts at the same time, and they have agency rather than simply listening to the educator telling them what the class is going to involve. It can work well with any number of students if you are OK with having a messy whiteboard of words/phrases.
Challenges	With many students, it can lead to students writing over each others' posts (Roberts, 2013). Suggestion for a large class: change to a Google Sheet so each student has one row each to type in. Although this isn't as visually appealing, it may be an easier format for a post-class audit of student information to be used to plan for upcoming lessons.

Category	Revision
Scenario	Used at the start of class to retrieve content from the previous lesson.
Share file usage	Prepare a list of True/False questions pertaining to the previous week's content. Use a shared Google Doc or Sheet with two columns labelled True and False. Insert enough shapes for students to choose one and enter their name into. As you ask your True/False questions, students move their avatar left or right under the chosen heading.
Learning benefits	Educators report that whilst Zoom polls are effective for revision, adding in a gamification element increases the enjoyment of a standard revision section of a lesson. Not only having to think of the answer but having to physically move your avatar from left to right is simply more active and reportedly, fun. Because of the fun element within gamification, it's incredibly successful as a short-term memory boost for the revision lesson and its content (Treiblmaier & Horst, 2018).
Challenges	Some students cannot engage easily with shared docs if they are using a mobile phone because of the restricted screen size. Using Kahoot!, which is designed for mobile learning, could be an easier gamification product solution for some students. However, if you have only one or two students who can't use the shared file, you can invite them to use their voice or put their answer in the chat to remain involved. Also, choosing one student who can't access the file to be the quizmaster instead of you may also create inclusion for a tech-challenged member of the group.

Category	Content Learning
Scenario	Listening comprehension activity.
Share file usage	Use a Google Slide and create one slide per group of three, or a Sheets and create one tab per group of three. Add a beginning slide or tab to write some listening comprehension questions. Students complete the listening (e.g., podcast, YouTube clip) individually and then in groups, answer the comprehension questions on their designated slide or tab (they can copy and paste the questions to their own workspace if it's easier for them).
Learning benefits	Educators say that in traditional unstructured 'watch a video and then discuss' activities, the skills required to effectively cooperate with peers are often lacking and cause lengthy and poor-quality group work. Using a shared file with pre-written comprehension questions focuses students' attention on the task, structuring some of the social skills required for effective online cooperation (Kaptelinin, 2014). Khalili (2018) reports that it also saves time in that the educator can intervene more easily when they are monitoring all groups virtually, not needing to enter each breakout group to check on progress but being able to target those specific groups who still have blank pages or incorrect answers. Also, students can gain deeper knowledge through peer-to-peer interaction in small groups (Northey et al., 2017), a useful activity structure for videos with difficult content to comprehend.
Challenges	If a student is working from a mobile phone or has tech issues, this could restrict the ability for them to enter information on the shared file. If that's the case, simply allocating a scribe in the group so a tech-challenged group member can use their voice only will allow for adequate participation. Hint: Knowing who your tech-challenged students are can be very helpful. Consider giving your students a Microsoft Form to complete at the start of your study period to find out what learning challenges students may have so you can lesson plan around their challenges.

Category	Asynchronous feedback
Scenario	A student workbook for in-class and asynchronous co-authorship between the student and educator.
Share file usage	The educator creates a Google Doc workbook and posts it for the students to access. The students save the file as their subject code and name and share the link with the educator. The students must ensure they have selected 'editing access' when creating the link. The educator then pastes the links beside each student's name on the roll and clicks the link at any point during the lesson, the week, or the study period to check on student progress and provide feedback when necessary.
	Some educators report the positives of 24/7 accessibility to the student's

Learning benefits	work since the student and the educator can co-author the same document and not be constrained by availability for synchronous appointment times. This is especially useful for formative learning purposes, ensuring formative feedback is provided before major assessments are due (Sekulich, 2020).
Challenges	Some educators may find it cumbersome to store a large amount of individual student links. However, good administration management could minimise the potential challenges here. If you have a large class and it sounds daunting to have 50+ student workbook links, consider the

	alternative administration involved in emailing student documents back and forth.
Category	**Problem-based learning (PBL) group activities**
Scenario	An online group PBL assessment task, involving collaborative group work resulting in a presentation.
Share file usage	The educator creates a Google Sheet, with an instruction page for the PBL task and a blank slide per group. Each group uses the internet to solve the PBL task and present their information on their dedicated group's slide. Each group then gives a short presentation to the class by sharing their screen. Ensure you instruct the class to come back together to the main classroom to see the presenters' faces as they present.
Learning benefits	Cooperatively working in a group through social constructivist practices increases social presence, which in turn, increases cognitive presence (Shackelford & Maxwell, 2012). Students also report appreciating the support of the educator being able to monitor the group's progress and intervene on the shared workspace to keep students on task (Khalil, 2018).
Challenges	Many educators say that they have underestimated the length of time required for students to complete a PBL activity online. Consider all those micro-online experiences such as getting into groups, muting and unmuting, talking over the top of someone, perhaps having voice only and not visible faces for social cues, and cooperating using technology that may be unfamiliar. This can cause additional time taken up achieving cooperation and less time for the task completion. A rule of thumb is to add 10 minutes of admin, tech issues, and chatting to any group activity time. Moreover, if you are using a shared doc for a group assessment task, ensure you have given your students enough practice opportunities, so they are comfortable with the technology and focus on the learning outcomes of the assessment.

Figure 2: Using a Google Doc to facilitate a warmer activity.
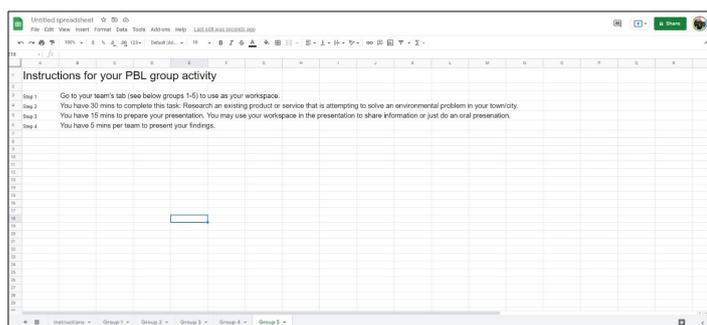
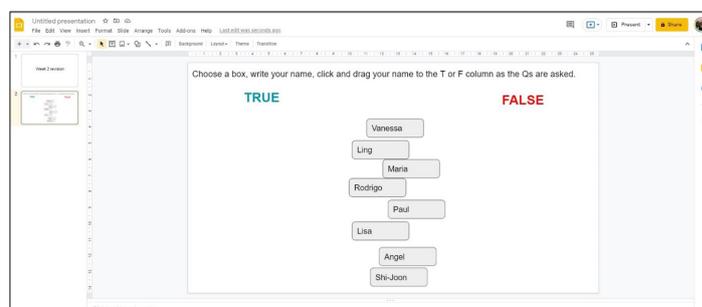Figure 3: Using a Google Sheet to facilitate a PBL group activity.

Figure 4: Using a Google Slide to facilitate a revision activity.

To conclude this EdTech review, it's important to note that collaborative online learning is not new, nor is it incredibly difficult. For an educator to succeed at quality online teaching, they need three things: an awareness of the teaching tools available to facilitate efficient and effective group work, an understanding of the proven benefits of social constructivism (and the theories it spawned) to create better learning outcomes, and a willingness to try new pedagogies. Once these three components are present, the educator need only test out a few Google shared file activities with some faculty peers, and then jump into the deep end at their next online lesson. By presenting a history of cloud-based shared files, exploring Google's suite of shared file options, discussing the importance of quality online peer-peer learning, and concluding with practical case studies that any educator can follow, this review has aimed to improve online group work. Facilitating boring and ineffective group work – or omitting it altogether to lecture – is not fulfilling our commitment to the modern online student to provide effective and efficient collaborative learning opportunities. Implementing online technology, such as a shared file, improves collaboratives learning experiences.
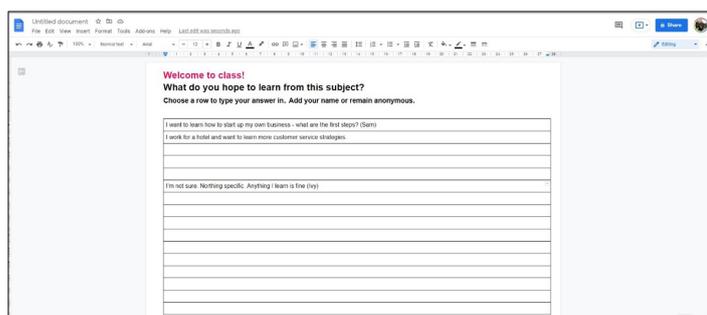
References

Google. (2021). *Google docs: Free online documents for personal use.* Google.com.au. https://www.google.com.au/docs/about/

Kaptelinin, V. (2014). Activity theory. In *The Encyclopedia of Human-Computer Interaction*. Interactive Design Foundation. https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/activity-theory#:~:text=The%20foundational%20concept%20of%20the

Khalil, Z. M. (2018). EFL students' perceptions towards using Google Docs and Google Classroom as online collaborative tools in learning grammar. *Applied Linguistics Research Journal, 2*(2). https://doi.org/10.14744/alrj.2018.47955

Northey, G., Govind, R., Bucic, T., Chylinski, M., Dolan, R., & van Esch, P. (2017). The effect of "here and now" learning on student engagement and academic achievement. *British Journal of Educational Technology, 49*(2), 321–333. https://doi.org/10.1111/bjet.12589

Perry, M., & Morphett, T. (2015). Panopticon or panacea?

Googledocs, word processing, and collaborative real-time editing. *Scholarly and Research Communication, 6*(4). https://doi.org/10.22230/src.2015v6n4a213

Roberts, S. L. (2013). The "chalk talk" 2.0: Using Google Docs to improve the silent discussion in social studies. *The Social Studies, 104*(3), 130–136. https://doi.org/10.1080/00377996.2012.703972

Rodrigo, A. (2020). *Microsoft Word vs Google Docs compared (which is better to use in 2020?)*. Business Envato Tuts+. https://business.tutsplus.com/articles/google-docs-vs-microsoft-word--cms-35158

Salmon, G. (2021). *Five stage model for online learning.* Gilly Salmon.com. https://www.gillysalmon.com/five-stage-model.html

Shackelford, J. L., & Maxwell, M. (2012). Sense of community in graduate online education: Contribution of learner to learner interaction. *The International Review of Research in Open and Distributed Learning, 13*(4), 228. https://doi.org/10.19173/irrodl.v13i4.1339

Sekulich, K. M. (2020). Learning through formative feedback: A review of the literature. *International Journal for Professional Educators, 86*(3), 51-59.

Treiblmaier, H., & Putz, L.-M. (2018). Increasing knowledge retention through gamified workshops: Findings from a longitudinal study and identification of moderating variables. *Hawaii International Conference on System Sciences.* Hawaii International Conference on System Sciences, Hawaii.

Tweney, D. (2008). Dec. 9, 1968: The mother of all demos. *Wired.* https://www.wired.com/2008/12/dec-9-1968-the-mother-of-all-demos-2/

Vanhemert, K. (2015). The most epic demo in computer history is now an opera. *Wired.* https://www.wired.com/2008/12/dec-9-1968-the-mother-of-all-demos-2/

Vasileva, O., & Balyasnikova, N. (2019). (Re)introducing Vygotsky's thought: From historical overview to contemporary psychology. *Frontiers in Psychology, 10*(1515). https://doi.org/10.3389/fpsyg.2019.01515