

# Application of Learning Theories and The Revised Bloom's Taxonomy in Designing Google Classroom Activities

Tuan Sarifah Aini Syed Ahmad

Academy of Language Studies, Universiti Teknologi MARA, Negeri Sembilan Branch,  
Seremban Campus, Persiaran Seremban Tiga/1, 70300 Seremban 3, Negeri Sembilan,  
Malaysia

*tsyaini@uitm.edu.my*

## ABSTRACT

The rapid development of educational technology in the 21st century has created numerous online learning platforms and digital applications to support learning. One of the common online learning platforms that is currently used is Google Classroom (GC). The use of Google applications such as Google Docs, Google Slides and Google Quiz enables the instructors to design different types of learning activities in GC. However, having a great platform and tools is inadequate to ensure learning can take place effectively. Therefore, the application of learning theories such as Behaviourism, Cognitivism and Constructivism, and a framework, the revised Bloom's Taxonomy, is essential for designing learning activities in GC using the Google applications. Therefore, this paper explores how the learning theories and the revised Bloom's Taxonomy can be applied in the design of learning activities in GC using Google applications.

**Key Words:** Google Classroom, Google applications, the revised Bloom's Taxonomy, learning theories

## 1. INTRODUCTION

Online learning has become a phenomenon in the 21st century. It enables learning to take place from anywhere and at any time (Urh, Vukovic, Jereb, & Pintar, 2015), and increases participation in learning (Heggart & Yoo, 2018). The popular practice of conducting online learning is by combining learning platforms and web-based applications because it allows students to access information directly via the Internet (Zamfiroiu & Sboru, 2014). Google Docs, Google Slides and Google Quiz are web-based applications that use the cloud system, Google Drive. Therefore, it is easy to use them with GC.

There are many online applications for teaching and learning purposes. Online applications for learning can be divided into two types: (1) the applications that are used as the platform of online learning activities and (2) the applications that are used to design online learning activities. This paper suggests the use of GC as a platform of online learning, and three Google applications known as Google Docs, Google Slides and Google Slides as tools for designing learning activities. Although the Google applications offer many advantages, they cannot promise learning to take place effectively unless they are used appropriately. Therefore, this paper explores how learning theories and the revised Bloom's Taxonomy can be applied in the design of learning activities on GC by using the Google applications. By understanding how the learning theories and the revised Bloom's Taxonomy support the design of the learning activities, instructors may be facilitated to design effective learning activities that may enhance their students' learning.

## 2. GOOGLE APPLICATIONS

GC is chosen as the online learning platform because of several reasons. First, it is a free application. Second, it is also user-friendly. Third, it offers flexible access. It is accessible through several digital devices such as smartphones, tablets and personal computers. It can also be accessed as a phone app that is supported in the android and IOS systems. Moreover, it can be accessed as a windows app by using the main browsers such as Chrome, Microsoft Edge, Firefox, Safari and Internet Explorer. Finally, it supports many types of files that enable the sharing of documents, presentation slides, worksheets, images, audios and videos (GFC Global, 2020). Prior research demonstrated that GC had positive impacts on ease of access, perceived usefulness, communication and interaction, instruction delivery and students' satisfaction (Al-Marroof & Al-Emran, 2018; Shaharane, Jamil, & Rodzi, 2016), was easy to understand, learn and operate (Ventayen, Estira, Guzman, Cabaluna, & Espinosa, 2018), was attractive (Ventayen et al., 2018), and was easy to keep track and assess the submission of assignments, solved the problem of bad handwriting and violation of deadline issues (Bhat, Raju, Bikramjit, & Souza, 2018).

Three Google applications (Google Docs, Google Slides and Google Quiz) are chosen as tools for designing online learning activities on GC because of several reasons. First, the applications allow the creation of files on Google Drive for easy access, sharing and uploading in GC. Second, files created by using Google Docs and Google Slides can be used for collaborative learning when the files are shared with the setting that everyone can edit. Thus, students can participate in the tasks at real time by choosing "editing" for writing their ideas or "suggesting" for giving opinions on other students' writing. Instructors can also provide feedback instantly in the shared file. Finally, Google Quiz permits the design of quizzes with automatic or manual grading. The quizzes with automatic grading allows students to assess their performance instantly so that they can access their learning progress and their attainment of learning objectives. Immediate feedback can also be provided in quizzes which allows students to do reflections on their learning that may promotes deep learning (Tärning, 2018). As a result, immediate feedback is apparently meaningful to help learning to progress.

## 3. LEARNING THEORIES

The application of tools alone cannot promise learning to occur. Therefore, the design of online learning activities using the tools must consider certain learning theories and frameworks that can explain how learning can take place. Therefore, the design of online learning activities using the Google applications applies three learning theories namely Behaviourism, Cognitivism and Constructivism. The learning theories are explained as follow:

- a. Behaviourism: It notes that learning occurs when there is a change in behaviours that can measured and observed (Brown, 2006). Another important notion is that learning can be conditioned by providing positive and negative reinforcements, and punishment (Brown, 2006).
- b. Cognitivism: It describes that learning should occur in stages as it involves mental activities (Brown, 2006). Therefore, learning activities should start from simple to complex tasks in term of cognitive difficulty levels.
- c. Constructivism: It explains that learning occurs when meaning can be constructed by connecting previous knowledge with the new knowledge (Brown, 2006). In order to ensure learning occurs effectively, students have to be offered with authentic learning activities by using a meaningful context (Brown, 2006).

## 4. REVISED BLOOM'S TAXONOMY

The design of online learning activities using the Google applications also applies a framework namely the revised Bloom's Taxonomy (Krathwohl, 2002). The taxonomy has six cognitive difficulty levels which are Remember, Understand, Apply, Analyse, Evaluate and Create. The revised taxonomy is recommended for designing digital learning activities (Munzenmaier & Rubin, 2013) because of its breadth and depth to each cognitive level since it has two dimensions which are cognitive process and

knowledge (Krathwohl, 2002) compared to the original Bloom’s Taxonomy that only has one dimension which is knowledge (Bloom et al., 1956).

The taxonomy has been commonly used in the design of curriculums ad assessments since its introduction in 1956. It allows the design of curriculums and assessments systematically by guiding in the writing of learning objectives (Bloom et al., 1956; Krathwohl, 2002; Munzenmaier & Rubin, 2013). There are specific action verbs provided for each cognitive levels that can be obtained from many sources. The taxonomy also emphasizes that learning mastery occurs in progress that starts from simple to complex levels (Bloom et al., 1956; Krathwohl, 2002). The simple level is prerequisite for the complex levels. Therefore, learning tasks should be provided from easy to difficult in term of cognitive levels.

**5. APPLICATION OF LEARNING THEORIES AND THE BLOOM’S TAXONOMY IN THE DESIGN OF ONLINE LEARNING ACTIVITIES**

Behaviourism emphasizes on measurable and observable behaviours. Therefore, every learning activity should have measurable learning objectives that are provided at the beginning of the activities. Learning objectives are used by instructors and students to evaluate learning progress. Learning objectives should be written by using the Bloom’s action verbs.

Cognitivism emphasizes learning activities should be provided from simple to complex tasks. Therefore, learning activities can be provided according to cognitive difficulty levels. The revised Bloom’s Taxonomy can be applied to guide the instructor in designing online learning activities that has six cognitive levels: Remember, Understand, Apply, Analyse, Evaluate and Create. The simple cognitive levels must be completed first before going up to the next level.

Constructivism emphasizes on providing authentic learning materials as to allow students to construct meaning. Therefore, the instructor needs to ensure that learning activities are design by using authentic materials and in meaningful context that are related to real life situations, and provides the means that students can construct understanding based on their previous and new knowledge.

Another crucial element in designing learning activities is immediate feedback. It is important to inform students’ progress by knowing their response is correct or wrong (corrective feedback), make them feel good (praise feedback) or explain their mistakes (explanatory feedback) (Tärning, 2018). Corrective and praise feedback are positive reinforcements which support Behaviourism. Whereas, explanatory feedback supports Constructivism since it allows students to construct new understanding based on their mistakes and the explanation provided.

Table 1 Application of learning theories and the framework in the design of online learning activities using Google Docs, google Sheets and Google Quiz

Learning Theory	Element	Explanation	Google Application
Behaviourism	Learning objectives	Provide learning objectives at the beginning of learning activities. Use Bloom’s action verbs to writing learning objectives.	Google Docs Google Slides Google Quiz
	Positive reinforcement	Points can be awarded for a task in GC when the task is posted as an assignment in Classwork Award positive points for correct answers.	Google Docs Google Slides Google Quiz
Cognitivism	Cognitive difficulty levels	Use the revised Bloom’s Taxonomy in arranging learning activities into six he cognitive difficulty levels: Remember, Understand, Apply, Analyse, Evaluate and Create.	Google Docs Google Slides Google Quiz
Constructivism	Authentic learning materials	Select learning materials that have a meaningful context.	Google Docs Google Slides Google Quiz
	Construction of meaning	Write in comments in the files or in GC. Set explanatory feedback in Feedback in the quiz.	Google Docs Google Slides Google Quiz

The application of Behaviourism, Cognitivism and Constructivism and the revised Bloom's Taxonomy in designing online learning activities using Google Docs, Google Slides and Google Quiz on GC are tabulated in Table 1.

## 6. CONCLUSION

Designing online learning activities requires a lot of efforts and time-consuming. Hence, it is important to understand how learning takes place by the explanation provided by the learning theories (Behaviourism, Cognitivism and Constructivism) and the framework (the revised Bloom's Taxonomy. Table 1 can facilitate the instructors to design online learning activities systematically and consistently by considering to include the elements in design of learning activities. By understanding the functions of the elements in supporting learning, the instructors may select only the elements required to meet their students' learning needs.

## REFERENCES

- Al-Marroof, R. A. S., & Al-Emran, M. (2018). Students acceptance of google classroom: An exploratory study using PLS-SEM approach. *International Journal of Emerging Technologies in Learning*, 13(6), 112–123. <https://doi.org/10.3991/ijet.v13i06.8275>
- Bhat, S., Raju, R., Bikramjit, A., & Souza, R. D. ' (2018). Leveraging E-Learning through Google Classroom: A Usability Study. *Journal OfEngineering Education Transformations*, 31(3), 1–7.
- Bloom, B. S., Englehard, M. D., Furst, E. J., Hill, W. H., Krathwohl, D. R., & Committee of College and University Examiners. (1956). *Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain*. New York, 16, 207. [https://doi.org/10.1300/J104v03n01\\_03](https://doi.org/10.1300/J104v03n01_03)
- Brown, H. D. (2006). *Principles of Language Learning and Teaching*. Language (5th ed.). Sans Francisco: Pearson Education. <https://doi.org/10.2307/414380>
- GFC Global. (2020, May 10) Google Drive Retrieved from <https://edu.gcfglobal.org/en/googledriveanddocs/>
- Krathwohl, D. R. (2002). A Revision of Bloom ' s Taxonomy : An Overview. *Theory Into Practice*, 41(4), 212–218. <https://doi.org/10.1207/s15430421tip4104>
- Munzenmaier, C., & Rubin, N. (2013). Bloom's Taxonomy: What's Old Is New Again. The eLearning Guild. Santa Rosa: Thw eLearning Guild. Retrieved from [http://www.elearningguild.com/research/archives/index.cfm?id=164&action=viewonly&utm\\_campaign=research-blm13&utm\\_medium=email&utm\\_source=elg-insider](http://www.elearningguild.com/research/archives/index.cfm?id=164&action=viewonly&utm_campaign=research-blm13&utm_medium=email&utm_source=elg-insider)
- Shaharane, I. N. M., Jamil, J. M., & Rodzi, A. S. S. M. (2016). The application of Google Classroom as a tool for teaching and learning. *Journal of Telecommunication, Electronic and Computer Engineering*, 8(10), 5–8.
- Tärning, B. (2018). Review of feedback in digital applications – Does the feedback provide support learning? *Journal of Information Technology Education: Research*, 17, 247–283.
- Ventayen, R. J., Estira, K. L. A., Guzman, M. J. De, Cabaluna, C. M., & Espinosa, N. N. (2018). Usability Evaluation of Google Classroom: Basis for the Adaptation of GSuite E-Learning Platform. *Asia Pacific Journal of Education, Arts and Sciences*, (October). Retrieved from <https://www.researchgate.net/publication/322036218>
- Zamfiroiu, A., & Sborca, C. (2014). Statistical analysis of the behavior for mobile E-learning. *Procedia Economics and Finance*, 10, 237–243. [http://doi.org/10.1016/s2212-5671\(14\)00298-6](http://doi.org/10.1016/s2212-5671(14)00298-6)