Students View of Technology in the Classroom

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EDUC 607 Introduction to Educational Research
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November 27, 2018

**ABSTRACT**
The emergence of advanced technologies has continued to revolutionize and disrupt the way of doing things across the globe. Over the years, the technologies have been incorporated in the classrooms to aid the students’ learning. However, there is no substantive guide on the effectiveness of the online study tools in the students’ learning. This was the main objective of the study to examine the students’ perceptions on the usefulness of technology in the classroom. The study findings were drawn from a sample of 454 students. Data was collected using online questionnaires sent to the students through a survey link. The study results indicated that Google Classroom, Google Docs, Forms, Sheets, Present and Drive, and Kahoot were the most used tools among the students in that order. A majority of the students indicated that the usefulness of the tools was above average. Google Docs, Forms, Sheets, Present and Drive was perceived to be the most effective followed by Google Classroom and Kahoot respectively.
***Keywords:*** Google Classroom, Google Docs, Forms, Sheets, Present and Drive, Kahoot, Students’ learning, Technology

# INTRODUCTION

## Background

The emergence of advanced technologies has continued to revolutionize and disrupt the way of doing things across the globe. Particularly, the new technologies are arrayed with numerous benefits such as improving the lives of people and businesses by making work easier (Zimmerman, 2014), the discovery of new remedies to ailments (Devine & O'Clock, 2015), improving the speed of making financial settlements and enhancing the dissemination of information (Brynjolfsson & McAfee, 2014). In the classroom, the new technologies have provided diversified means of learning as opposed to the traditional face-to-face model of learning. The new learning technologies, also known as ‘flipped classrooms’, include applications, videos and online classrooms (Morgan, 2014). The students access the learning materials and lessons from computers and mobile devices, thus do not have to be in a classroom setting (Hwang, Lai, & Wang, 2015). According to Gilboy, Heinerichs & Pazzaglia (2015), students tend to enjoy and prefer the flipped classrooms to the traditional lectures. The new technologies, therefore, have provided flexibility and autonomy in planning classwork for both the students and teachers.

Despite applying the technologies in the classroom, it is unclear how the technologies impact the students’ learning given that it is the sole agenda for being in school. McCabe & Meuter (2011) established that while students enjoyed using the technology-based course management tools, they did not find them effective in improving their learning experience. This can be attributed to high levels of disengagement and loss of critical thinking skills when students use the technological devices in learning (Heflin, Shewmaker, & Nguyen, 2017). On the other hand, Owen (2014) claimed that adopting the flipped classrooms improves the students learning. This can be attributed to the improved interactions between the students and the educators, and the students and other students (Moffett, 2015). Also, technology presents an opportunity to engage in diverse teaching methodologies that are acceptable and enjoyable to a wider student-base (Drew, 2015). This presents the technology-based with both advantages and disadvantages, while it remains unclear whether the application of the online learning technologies lead to an improvement in the students’ learning outcomes.

## General Statement of the Problem

Modern teachers have access to a large number of online resources. The variety of such resources can range from direct instructions to classroom management. Some use the online resources to supplement the traditional pedagogical lessons while others use the resources as the main channel to teach. However, it is unclear whether the technology-based teaching results in effective learning for the students. This formed the basis of the study to evaluate whether the students find the online teaching helpful.

## Review of Related Literature

## Scope and Assumptions

1. The study assessed technology-based tools in the classroom only.
2. The study was student-based (only opinions from students were incorporated in the study).
3. The objective was to examine the perspectives of students concerning the use of technology in the classroom.
4. The study assessed ‘Google Classroom’, ‘ClassDojo’, ‘Kahoot’, ‘Khan Academy’, ‘Online Textbook’, and Google Docs, Forms, Sheets, Present and Drive.
5. The 6 online teaching tools were taken as a representative of all online learning tools.
6. The study assumed that all the students were tech-savvy (they were technologically literate).

## Research Questions

 The following research questions were used to guide the research:

1. Which are the most popular online study tools for students?
2. Do students find the use of technology in the classroom as useful?
3. Which technologies do the students find to be the most effective?

## Definitions of Terms

ClassDojo: classroom communication app used to share reports between parents and teachers (ClassDojo, 2018).

Flipped classroom: an innovative pedagogical approach that focuses on learner-centred instruction (Gilboy, Heinerichs, & Pazzaglia, 2015).

Google Classroom: a free web service established by Google for schools that aim to simplify the creation, distribution and grading assignments in a paperless way (Google, 2018).

Kahoot: a free game-based learning platform that makes it fun to learn – any subject, in any language, on any device, for all ages (Kahoot, 2018).

Khan Academy: a non-profit educational organization, which creates a set of online tools that help educate students (Khan Academy, 2018).

## The Significance of the Study

 Following the continuous advancement of technology in the classroom, it is critical to understand the implications on the learning experience of the students. Thus, the study results provide a basis on understanding the effectiveness of the technology-based teaching tools. This is useful to the teachers as it will be a guide in selecting the most suitable technologies by considering the learning outcomes for the students. Also, the study is useful to technology developers given that they can use the study results to make future designs that incorporate the opinions and preferences outlined by the students studied in this research. The study also acts as a guideline for making improvements to the existing technologies so that they can be more useful to the students. The findings of the study are also useful to future researchers as it adds to the existing literature in the subject. Therefore, future studies can use it as a basis to make further assessments and to make comparisons on their findings.

**A Summary of: The Effects of the Classroom Performance System on Student**

**Participation, Attendance, and Achievement**

The study was carried out in South Texas College. The participants were college students from different ethnicities. The students were from Anatomy and Physiology classes. The aim of the study was to establish if Classroom Performance System (CPS) had any effect on attendance, participation and achievements among students. The research methodology used was quantitative method and quasi-experimental design. The questions the students responded to were true or false making it easier to access results.

CPS improved student participation significantly in classes where it was used compared to classes that did not use the instructional system. Attendance and achievement levels also increased in the students using CPS in their classroom.

CPS however did not act on its on as it depended on various variables. The teacher was supposed to be computer literate with the knowledge of using computer applications such as PowerPoint and Ms Word. The teacher also has to be able to browse the internet easily and be properly trained to use the CPS model.

The instructor also needs to develop the best questions, meaning the students can understand the question and give an answer within a timed period. The limitation of this study is that a course instructor without all these knowledge, CPS will not be as effective. CPS largely depends on how prepared the instructor is for better results. Used wisely however, it has the potential to transform a bored class into a lively one because students are excited to use technology to answer lecture questions. Students loved CPS because it was able to give real time evaluations. Students knew whether they got the answers correct or not. Their achievement progress was posted instantly and their attendance as well which helped students want to be better.

**A Summary Of: Using Online Peer Assessment in an Instructional Technology and Material Design Course through Social Media**

The purpose of this study was to investigate the views of student teachers on the benefits and limitations of using Facebook as an online peer assessment tool for their works. The data was collected via semi-structured interviews and later analysed through coding. The participants were 24 university student teachers.

The participants reported that Facebook was both fun and dependable in educational purposes. The study also found out that while students found education on Facebook exciting, they were also more likely to talk about issues affecting them and improving their lives generally. The student teacher also reported an increased self-image because they were getting positive peer assessment. This increase in self-esteem meant that they resolved to be better at their work at the end of an interaction.

The interacting students reported that they learnt more as a result of the critiques they got from their peers as they were honest. The students also pointed out that interaction on Facebook led to new ideas which are useful in the study process. The students were also happy that they could help each other improve throughout through peer positive criticism.

Students were happy that the Facebook interactions helped them establish their strengths and weaknesses. The study revealed that students became more confident in their future work as a result. Significant improvement was duly noted.

The students were however split on whether the teacher should be the moderator or not. Those against feared that a teacher moderator would affect the interaction levels. Those happy with a teacher moderator thought that discipline would be improved and control measures put in place. The students happy with a teacher moderator were more than those against. Facebook interactions were regarded highly.

**Using Technology Tools in the Public School Program**

The article titled as shown above aims at determining if the use of technology in a classroom affects grades, motivation, attitude and attendance among students. The study purposed to enlighten teachers on the integration of technology in the classroom to improve learning.

Data was collected by the aid of surveys made available to teachers and students. The study was conducted first without the use of technology within the class and after technology had been introduced in class. The subjects were from Kaiserslautern school district. For proper representation the study was inclusive of regular students and gifted students. They were aged between 11-13 years and shared a science class and the same teacher. The teacher used traditional method of teaching without technology in one class and taught four other classes incorporating technology. The survey was designed to have questions that were specific to the students and teachers. The questioned aimed at determining previous grades, attitudes towards school and motivation as well as attendance in relation to technology inclusion. Data was analysed through excel spread sheet.

The results showed that teachers did not use technology as much. They cited problems of insufficient training on how to use the technology. Younger teachers also had more skills and were more likely to use technology. This made some teachers give up on technology. Among students however, there was a lot of excitement with the introduction of technology within their regular class. The students participated more when the class used interaction with the addition of technology. Class attendance and motivation improved significantly with the use of technology. In cases where the teacher used technology by himself in instruction, attitudes remained low. Low performing students grades improved the most because while they did not particularly understand teachers, their motivation on using technology and self –confidence gradually improved. For regular students however, grades remained normal even with the introduction of technology. Trained teachers were more motivated to use technology in the lesson plans which also improved the motivation of learners.

The study recommended that teachers be given sufficient training before the introduction of technology in the classroom. The study recommended the continued use of technology among learners especially underperforming students as they receive other ways of acquiring information. The study urged teachers to be better motivated at experimenting with technology in addition to the traditional method of instruction. The study also urged school heads to involve everyone at the beginning of technology introduction so that no is left behind. Most importantly, the study recommended that schools should have proper policies regarding the use of technology within the school to maximise on the positives.

The major limitation experienced during the study was the amount of time it took to collect data, it was a whole semester. It also took a lot of cooperation to get the students and teachers to fill out the survey consistently. Teachers complained of lack of time as they had to do it during their free hours**.**

**A Summary Of: The Use of Mobile Technologies in Multimedia-Supported Learning Environments**

**The study was conducted in Anadolu University in Turkey among students in the same school. The aim of the study was to assess student opinion about using Personal Digital Assistants (PDAs) within the context of multimedia based applications. The participants were 17 in number and they had to be trained on how to use the PDAs before they were allowed to use them. The PDAs contained interactive multimedia design that was supposed to map student activity within three weeks. Data in form of interviews to the students was collected after the three week use of PDAs.**

**The data was analysed through descriptive analysis. The study established that students mostly have negative reviews concerning PDAs. They complained of insufficient videos and animations presented by the multimedia applications. They had difficulties in sharing and uploading files. Taking photos was a challenge and the PDA batteries died faster. The students were also dissatisfied with the keyboard which was composed of tiny buttons. The memory card was small so it could not hold enough content. The screen resolution could not be modified to a higher resolution. A majority of the menus provided were not used by the students so they were irrelevant. All the above reasons made the PDAs unpopular among students.**

**The students however had two compliments about the PDAs. PDAs were mobile meaning interaction was carried out in real time and learning was not limited to the classroom. They were also happy with the multimedia interactions.**

**The study found out that the negative reviews were more than the positive ones. The study recommended a review of all the negative feedback and that if PDAs were to be used, they would have to address the issues first. Good PDAs help in mobile learning.**

**A Summary of:Factors That Influence Technology Integration in the Classroom**

**The study was conducted in 2017 by Maureen C. Montgomery, Doctor in Education. The aim of the study was to investigate how teachers varied at using technology during instruction in their classroom. The participants were 49 teachers with varying years of teaching experience. The teachers taught high school and the study were conducted within one high school. They responded to eleven questions online and the methodology used in the study was quantitative in nature. The online platform which made the responses possible was the Qualtrics platform. The respondents were anonymous to researcher.**

**The study established that the use of technology by a teacher in a classroom setting highly depended on personal preference. The teachers used the technologies they were most comfortable with during class instruction. The availability of the technology within the school also influenced its use in the classroom because only available technologies were used. It is nearly impossible for teacher to use technologies not provided by the school because it would mean applying for funding or using the local libraries which are often limited in technology as well. This would require teachers to intervene themselves which is time consuming and they are not paid for the extra effort. The teachers therefore opted the easy way out, which is use what is available.**

**The study also found out that all teachers integrated technology in classroom instruction with minimal difference. The level of technology used by the teachers also did not vary. These factors therefore did not influence technology integration in the classroom.**

**There were only two factors that directly influenced technology use in the classroom. These are a teachers personal preference on which technology to use for their class and if the technology is provided by the school.**

**A Qualitative study of Technology Integration into Culture and Sustainability in schools**

**The above named article is about students using the TeachUp! The study aimed at evaluating the effectiveness of the program on student achievement. The participants were employees using the TeachUp! program in two school districts in Mississippi. The method of data collection was interviews to assess the perception of the use of TeachUp in culture and operation in schools. The study aimed at establishing changes in the long run and weather education improved as a result of using the program. To participate in the study, one had to be a technology director, a principal in either high school or elementary, teach English or science in high school, be a middle school librarian, and be a math or music teacher or a special education teacher.**

**In culture, the results showed that school projects were completed better because of TeachUp! Classes were better organised as a result. In school operations, technology has been integrated in almost every activity thanks to TeachUp! unlike before. Teachers report greater confidence in using technology as an instruction tool. The use of technology including computer emails or PowerPoint and phones in the classroom increased effective communication between teachers and school heads and information is shared easily. In teaching, TeachUp! Increased the acceptance of technology use among traditionally instructing teachers; who were not very comfortable with technology in the classroom. Teachers also reported using technology in lesson plans. TeachUp! drastically improved the attitude of teachers. On sustainability, the study reveled that this new craze was not a passing thing. Teachers were now very dependent on technology and used the Promethean board daily. Faculties within the school also met up more to discuss what more they could use technology for in school activities.**

**Among students, teachers reported that all students were using technology in the classroom. Students are researching, calculating and interacting with each other to learn in the classroom. Some students understood the technology before but could not use it effectively because their teachers hardly encouraged it. Now, these students are happy that classrooms are using technology every day in all classrooms and the facilities like computers have been increased. The students cover the syllabus more effectively as a result.**

**The study concluded that TeachUp! Has drastically improved the way technology is used in schools today. The same technology was available in schools before but not in use because most teachers did not know how to use it and were not comfortable with it. With the help of interns, teachers are realising that technology can be used in more than one way to improve the learning experience of students. The attitudes teachers held of technology have changed for the better. Classrooms are now happy places as modern students are highly motivated about technology. Schools are brainstorming for new ideas on how to use the technology at their disposal to achieve greater things. Impressively, some teachers now can no longer imagine how they survived in traditional classrooms.**

# DESIGN AND METHODOLOGY

## Subjects

 The student from Palm Middle School and Vista Del Lago High Schools were surveyed. Both schools are located in Moreno Valley. The target number was a population of 454 students.

## Instrumentation/Data Collection

 The study data was collected using online questionnaires. The questionnaires were administered using Google Forms. An email was sent out to the teachers in both schools. The email sought to seek consent from the students through the teachers for their participation in the survey. The link to the survey was sent out to the teachers. Some posted it onto their website while others wrote out the link on their boards.

 The survey took the form of structured questionnaires. It had 13 questions, grouped into two; general information and main survey. The general information section only had one question, which evaluated the students’ grade. The main survey had 12 questions that were grouped into six categories (each relating to the online classroom tool being assessed: ‘Google Classroom’, ‘ClassDojo’, ‘Kahoot’, ‘Khan Academy’, ‘Online Textbook’, and Google Docs, Forms, Sheets, Present and Drive.). In each of the six categories, there were two questions:

1. Do you use "x online classroom tool" in your classes? If yes, select how many.

This question required a yes or no answer and where the answer was yes, the students were required to replace their responses with the number of classes where they had applied the online classroom resource.

1. How helpful is it 0 for not helpful 5 for very helpful?

The responses in this section were measured using a Likert Scale ranging from 0-5 (0 for not helpful 5 for very helpful).

## Data Treatment Procedures

 The data was compiled and assessed using ANOVA. The presentation of the results was done using descriptive statistics.

## Limitations of the Design

 The design only measured the perceived usefulness of technology and did not measure the learning outcomes or the effectiveness of the online tools in learning. Also, the study only based the results on the students’ perceptions and did not incorporate the insights of the other stakeholders involved in the students’ learning.

# PRESENTATION OF FINDINGS

## Response Rate Assessment

 Of the total students, 2 students did not respond to any of the questions. This represented a response rate of 99.56%, which was acceptable in deducing results from the survey. According to Nulty (2008), an acceptable response rate for a survey of about 500 people should be 58%. Thus, the study’s response rate of 99.56% was way above the acceptable threshold. Table I below shows the response computations for the entire survey.

|  |  |  |
| --- | --- | --- |
|   | Number | Percentage |
| Total responses received | 5742 | 97.72% |
| Non-response | 134 | 2.28% |
| Total responses expected | 5876 | 100.00% |

*Table I: Response Assessment for the Survey*

## General Information

 The total number of respondents that indicated their grade were 370 (81.86%) while 82 (18.14%) did not indicate their class grade. Table II below illustrates the distribution of the students per grade.

|  |  |  |
| --- | --- | --- |
| Grade | Number | Percentage |
| 8 | 167 | 36.95% |
| 9 | 73 | 16.15% |
| 10 | 7 | 1.55% |
| 11 | 35 | 7.74% |
| 12 | 88 | 19.47% |
| No Response | 82 | 18.14% |
| Total | 452 | 100.00% |

*Table II: Composition of the Students per Grade*

 The students that participated were from grade 8-12. The majority (36.95%) was the students in grade 8, followed by grade 12 (19.47%) and the third largest category was grade 9 (16.15%). The least number of students was grade 10 (1.55%) followed by grade 11 (7.74%).

## Online Classroom Tools

 The online classroom tools tested were ‘Google Classroom’, ‘ClassDojo’, ‘Kahoot’, ‘Khan Academy’, ‘Online Textbook’, and Google Docs, Forms, Sheets, Present and Drive. Table III below shows the familiarity of the tools amongst the students.

|  |  |  |
| --- | --- | --- |
| Online Classroom Tool | Number of Users | Percentage of Respondents |
| Google Classroom | 450 | 99.56% |
| ClassDojo | 25 | 5.53% |
| Kahoot | 382 | 84.51% |
| Khan Academy | 249 | 55.09% |
| Online Textbook | 239 | 52.88% |
| Google Docs, Forms, Sheets, Present and Drive | 448 | 99.12% |

*Table III: Usage of the Online Classroom Tools in the Classrooms*

 Google Classroom was the most popular with 99.56% of the students having used it for at least 1 of their classes. It was followed by Google Docs, Forms, Sheets, Present and Drive, and Kahoot with 99.12% and 84.51% respectively. Khan Academy had a usage of 55.09% while Online Textbook had a usage of 52.88%. ClassDojo was the least popular as only 5.53% of the students had used it.

### Google Classroom

 The first assessment was on ‘Google Classroom’. The results of the examination were as shown in Table IV below.

|  |  |  |
| --- | --- | --- |
| Number of Classes | Number | Percentage |
| 0 | 2 | 0.44% |
| 1 | 4 | 0.88% |
| 2 | 16 | 3.54% |
| 3 | 58 | 12.83% |
| 4 | 100 | 22.12% |
| 5 | 138 | 30.53% |
| 6+ | 134 | 29.65% |
| Total  | 452 | 100.00% |

*Table IV: Usage of Google Classroom*

 A majority of the students (60.18%) had used Google Classroom in 5 classes and more. Only 0.44% had no experience with Google Classroom while 4.42% had used 2 or less classrooms only. The students further scored the online tool based on their perceptions of its usefulness to their learning. Table V shows the results of the assessment.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| 0 | 6 | 1.33% |
| 1 | 4 | 0.88% |
| 2 | 25 | 5.53% |
| 3 | 99 | 21.90% |
| 4 | 159 | 35.18% |
| 5 | 159 | 35.18% |
| Total | 452 | 100.00% |

*Table V: Level of Usefulness of Google Classroom*

 A majority of the students (70.35%) classified the usefulness Google Classroom as above average while only 2.21% did not find it useful. 5.53% found it to be slightly below average while 21.90% found its usefulness to be average.

 A further analysis classified the usefulness based on the number of classes where the students had used the online tool. This was to delineate the usefulness further given that those that had used it in more classes had interacted more with it. Tables VI-XI show the detailed classification.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (1 Class) | Number | Percentage |
| 5 | 1 | 25.00% |
| 4 | 1 | 25.00% |
| 3 | 1 | 25.00% |
| 2 | 0 | 0.00% |
| 1 | 0 | 0.00% |
| 0 | 1 | 25.00% |
| Total | 4 | 100.00% |

*Table VI: Usefulness Rating for Students that had Used Google Classroom for 1 Class*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (2 Classes) | Number | Percentage |
| 5 | 1 | 6.25% |
| 4 | 10 | 62.50% |
| 3 | 3 | 18.75% |
| 2 | 1 | 6.25% |
| 1 | 1 | 6.25% |
| 0 | 0 | 0.00% |
| Total | 16 | 100.00% |

*Table VII: Usefulness Rating for Students that had Used Google Classroom for 2 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (3 Classes) | Number | Percentage |
| 5 | 13 | 22.41% |
| 4 | 14 | 24.14% |
| 3 | 24 | 41.38% |
| 2 | 6 | 10.34% |
| 1 | 0 | 0.00% |
| 0 | 1 | 1.72% |
| Total | 58 | 100.00% |

*Table VIII: Usefulness Rating for Students that had Used Google Classroom for 3 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (4 Classes) | Number | Percentage |
| 5 | 33 | 33.00% |
| 4 | 30 | 30.00% |
| 3 | 27 | 27.00% |
| 2 | 9 | 9.00% |
| 1 | 0 | 0.00% |
| 0 | 1 | 1.00% |
| Total | 100 | 100.00% |

*Table IX: Usefulness Rating for Students that had Used Google Classroom for 4 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (5 Classes) | Number | Percentage |
| 5 | 54 | 39.13% |
| 4 | 61 | 44.20% |
| 3 | 19 | 13.77% |
| 2 | 4 | 2.90% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| Total | 138 | 100.00% |

*Table X: Usefulness Rating for Students that had Used Google Classroom for 5 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (6+ Classes) | Number | Percentage |
| 5 | 57 | 42.54% |
| 4 | 43 | 32.09% |
| 3 | 25 | 18.66% |
| 2 | 5 | 3.73% |
| 1 | 3 | 2.24% |
| 0 | 1 | 0.75% |
| Total | 134 | 100.00% |

*Table XI: Usefulness Rating for Students that had Used Google Classroom for 6+ Classes*

 For the students that had used Google Classroom for 1 class only, 25% (1) found it to be very useful, 25% (1) found it to be fairly useful, 25% (1) found it to moderately useful, while only 1 (25%) found it not to be useful at all. Therefore, 50% found its usefulness to be above average. For the students that had used the online tool for 2 classes, none found it to be irrelevant. A majority (62.50%) perceived its usefulness to be slightly above average while 6.25% found it to be very useful. 12.5% found its usefulness to be below average, while 18.75% found its usefulness to be average. Therefore, 68.75% found its usefulness to be above average. For the students that had used the tool for 3 classes, 1.72% found it not to be useful while 10.34% found its usefulness to be slightly below average. 41.38% found its usefulness to be average, while 24.14% and 22.41% found it to be slightly above average and very useful respectively. Therefore, a majority (46.55%) found its usefulness to be above average.

 For the students that had used Google Classroom for 4 classes, only 1% found it not to be useful, while 9.00% found its usefulness to be slightly below average. 27.00% found its usefulness as average while 30.00% and 33.00% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (63.00%) found its usefulness to be above average. For the students that had used the tool for 5 classes, only 2.90% perceived its usefulness to be slightly below average. 13.77% found its usefulness as average while 44.20% and 39.13% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (83.33%) found its usefulness to be above average. For the students that had used the tool for 6 and above classes, 0.75% did not find it to be useful, while 5.97% found its usefulness to be below average. 18.66% found its usefulness as average while 32.09% and 42.54% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (74.63%) found its usefulness to be above average.

### Google Docs, Forms, Sheets, Present and Drive

 The second assessment was on Google Docs, Forms, Sheets, Present and Drive. The results of the examination were as shown in Table XII below.

|  |  |  |
| --- | --- | --- |
| Number of Classes | Number | Percentage |
| 0 | 4 | 0.88% |
| 1 | 13 | 2.88% |
| 2 | 46 | 10.18% |
| 3 | 69 | 15.27% |
| 4 | 69 | 15.27% |
| 5 | 101 | 22.35% |
| 6 | 150 | 33.19% |
| Total  | 452 | 100.00% |

*Table XII: Usage of Google Docs, Forms, Sheets, Present and Drive*

 A majority of the students (55.53%) had used Google Docs, Forms, Sheets, Present and Drive in 5 classes and above. Only 0.88% had no experience with the online tool while 13.06% had used it in 2 or less classrooms only. The students further scored the online tool based on their perceptions of its usefulness to their learning. Table XIII shows the results of the assessment.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment | 1 | 0.22% |
| 0 | 4 | 0.88% |
| 1 | 1 | 0.22% |
| 2 | 14 | 3.10% |
| 3 | 43 | 9.51% |
| 4 | 86 | 19.03% |
| 5 | 303 | 67.04% |
| Total | 452 | 100.00% |

*Table XIII: Level of Usefulness of Google Docs, Forms, Sheets, Present and Drive*

 A majority of the students (86.07%) classified the usefulness of Google Docs, Forms, Sheets, Present and Drive as above average while only 0.88% did not find it useful. 3.32% found it to be slightly below average while 9.51% found its usefulness to be average. 0.22% did not comment on the usefulness of the tool.

 A further analysis classified the usefulness based on the number of classes where the students had used the online tool. This was to delineate the usefulness further given that those that had used it in more classes had interacted more with it. Tables XIV-XIX show the detailed examination.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (1 Class) | Number | Percentage |
| 5 | 6 | 46.15% |
| 4 | 3 | 23.08% |
| 3 | 3 | 23.08% |
| 2 | 1 | 7.69% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| Total | 13 | 100.00% |

*Table XIV: Usefulness Rating for Students that had Used Google Docs, Forms, Sheets, Present and Drive for 1 Class*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (2 Classes) | Number | Percentage |
| 5 | 24 | 52.17% |
| 4 | 7 | 15.22% |
| 3 | 9 | 19.57% |
| 2 | 5 | 10.87% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| No comment | 1 | 2.17% |
| Total | 46 | 100.00% |

*Table XV: Usefulness Rating for Students that had Used Google Docs, Forms, Sheets, Present and Drive for 2 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (3 Classes) | Number | Percentage |
| 5 | 34 | 49.28% |
| 4 | 19 | 27.54% |
| 3 | 14 | 20.29% |
| 2 | 1 | 1.45% |
| 1 | 0 | 0.00% |
| 0 | 1 | 1.45% |
| Total | 69 | 100.00% |

*Table XVI: Usefulness Rating for Students that had Used Google Docs, Forms, Sheets, Present and Drive for 3 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (4 Classes) | Number | Percentage |
| 5 | 41 | 59.42% |
| 4 | 16 | 23.19% |
| 3 | 8 | 11.59% |
| 2 | 4 | 5.80% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| Total | 69 | 100.00% |

*Table XVII: Usefulness Rating for Students that had Used Google Docs, Forms, Sheets, Present and Drive for 4 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (5 Classes) | Number | Percentage |
| 5 | 77 | 76.24% |
| 4 | 17 | 16.83% |
| 3 | 6 | 5.94% |
| 2 | 0 | 0.00% |
| 1 | 1 | 0.99% |
| 0 | 0 | 0.00% |
| Total | 101 | 100.00% |

*Table XVIII: Usefulness Rating for Students that had Used Google Docs, Forms, Sheets, Present and Drive for 5 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (6+ Classes) | Number | Percentage |
| 5 | 121 | 80.67% |
| 4 | 24 | 16.00% |
| 3 | 3 | 2.00% |
| 2 | 2 | 1.33% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| Total | 150 | 100.00% |

*Table XIX: Usefulness Rating for Students that had Used Google Docs, Forms, Sheets, Present and Drive for 6+ Classes*

 For the students that had used Google Docs, Forms, Sheets, Present and Drive for 1 class only, 46.15% found it to be very useful, 23.08% found it to be fairly useful, 23.08% found it to moderately useful, while only 7.69% found its usefulness to be slightly below average. Therefore, a majority (69.23%) found its usefulness to be above average. For the students that had used the online tool for 2 classes, none found it to be irrelevant while 2.17% did not comment. 15.22% perceived its usefulness to be slightly above average while 51.17% found it to be very useful. 10.87% found its usefulness to be below average, while 19.57% found its usefulness to be average. Therefore, 67.39% found its usefulness to be above average. For the students that had used the tool for 3 classes, 1.45% found it not to be useful while 1.45% found its usefulness to be slightly below average. 20.39% found its usefulness to be average, while 27.54% and 49.28% found it to be slightly above average and very useful respectively. Therefore, a majority (76.81%) found its usefulness to be above average.

 For the students that had used Google Classroom for 4 classes, none found it not to be useful, while 5.80% found its usefulness to be slightly below average. 11.59% found its usefulness as average while 23.19% and 59.42% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (82.61%) found its usefulness to be above average. For the students that had used the tool for 5 classes, only 0.99% perceived its usefulness to be below average. 5.94% found its usefulness as average while 16.83% and 76.24% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (93.07%) found its usefulness to be above average. For the students that had used the tool for 6 and above classes, only 1.33% found its usefulness to be slightly below average. 2.00% found its usefulness as average while 16.00% and 80.67% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (96.67%) found its usefulness to be above average.

### Kahoot

 The third evaluation was on Kahoot. The results of the examination were as shown in Table XX below.

|  |  |  |
| --- | --- | --- |
| Number of Classes | Number | Percentage |
| 0 | 69 | 15.30% |
| 1 | 139 | 30.82% |
| 2 | 131 | 29.05% |
| 3 | 58 | 12.86% |
| 4 | 25 | 5.54% |
| 5 | 9 | 2.00% |
| 6 | 20 | 4.43% |
| Total  | 451 | 100.00% |

*Table XX: Usage of Kahoot*

 Only 6.43% had used Kahoot in 5 classes and above. 15.30% had no experience with the online tool while 59.87% had used it in 2 or less classrooms. The students further scored the online tool based on their perceptions of its usefulness to their learning. Table XXI shows the results of the assessment.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment | 7 | 1.55% |
| 0 | 50 | 11.09% |
| 1 | 12 | 2.66% |
| 2 | 44 | 9.76% |
| 3 | 73 | 16.19% |
| 4 | 89 | 19.73% |
| 5 | 176 | 39.02% |
| Total | 451 | 100.00% |

*Table XXI: Level of Usefulness of Kahoot*

 A majority of the students (58.76%) classified the usefulness of Kahoot as above average while 11.09% did not find it useful. 12.42% found it to be below average while 16.19% found its usefulness to be average. 1.55% did not comment on the usefulness of the tool.

 A further analysis classified the usefulness based on the number of classes where the students had used the online tool. This was to delineate the usefulness further given that those that had used it in more classes had interacted more with it. Tables XXII-XXVII show the detailed evaluation.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (1 Class) | Number | Percentage |
| 5 | 54 | 38.85% |
| 4 | 31 | 22.30% |
| 3 | 30 | 21.58% |
| 2 | 15 | 10.79% |
| 1 | 3 | 2.16% |
| 0 | 3 | 2.16% |
| No comment | 3 | 2.16% |
| Total | 139 | 100.00% |

*Table XXII: Usefulness Rating for Students that had Used Kahoot for 1 Class*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (2 Classes) | Number | Percentage |
| 5 | 50 | 38.17% |
| 4 | 35 | 26.72% |
| 3 | 21 | 16.03% |
| 2 | 15 | 11.45% |
| 1 | 6 | 4.58% |
| 0 | 4 | 3.05% |
| Total | 131 | 100.00% |

*Table XXIII: Usefulness Rating for Students that had Used Kahoot for 2 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (3 Classes) | Number | Percentage |
| 5 | 25 | 43.10% |
| 4 | 11 | 18.97% |
| 3 | 14 | 24.14% |
| 2 | 7 | 12.07% |
| 1 | 1 | 1.72% |
| 0 | 0 | 0.00% |
| Total | 58 | 100.00% |

*Table XXIV: Usefulness Rating for Students that had Used Kahoot for 3 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (4 Classes) | Number | Percentage |
| 5 | 15 | 60.00% |
| 4 | 4 | 16.00% |
| 3 | 4 | 16.00% |
| 2 | 2 | 8.00% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| Total | 25 | 100.00% |

*Table XXV: Usefulness Rating for Students that had Used Kahoot for 4 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (5 Classes) | Number | Percentage |
| 5 | 7 | 77.78% |
| 4 | 1 | 11.11% |
| 3 | 0 | 0.00% |
| 2 | 1 | 11.11% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| Total | 9 | 100.00% |

*Table XXVI: Usefulness Rating for Students that had Used Kahoot for 5 Classes*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness (6+ Classes) | Number | Percentage |
| 5 | 16 | 88.89% |
| 4 | 2 | 11.11% |
| 3 | 0 | 0.00% |
| 2 | 0 | 0.00% |
| 1 | 0 | 0.00% |
| 0 | 0 | 0.00% |
| Total | 18 | 100.00% |

*Table XXVII: Usefulness Rating for Students that had Used Kahoot for 6+ Classes*

 For the students that had used Kahoot for 1 class only, 38.85% found it to be very useful, 22.30% found it to be fairly useful, 21.58% found it to moderately useful, while 12.95% found its usefulness to be below average. Therefore, a majority (61.15%) found its usefulness to be above average. For the students that had used the online tool for 2 classes, 3.05% found it to be irrelevant. 26.72% perceived its usefulness to be slightly above average while 38.17% found it to be very useful. 16.03% found its usefulness to be below average and an equal percentage (16.03%) found its usefulness to be average. Therefore, 64.89% found its usefulness to be above average. For the students that had used the tool for 3 classes, none found it not to be useful while 13.79% found its usefulness to be below average. 24.14% found its usefulness to be average, while 18.97% and 43.10% found it to be slightly above average and very useful respectively. Therefore, a majority (62.07%) found its usefulness to be above average.

 For the students that had used Google Classroom for 4 classes, none found it not to be useful, while 8.00% found its usefulness to be below average. 16.00% found its usefulness as average while 16.00% and 60.00% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (76.00%) found its usefulness to be above average. For the students that had used the tool for 5 classes, only 11.11% perceived its usefulness to be below average. A further 11.11% and 77.78% found its usefulness to be slightly above average and very useful respectively. Therefore, a majority (88.89%) found its usefulness to be above average. For the students that had used the tool for 6 and above classes, all of them found its usefulness to be above average. 11.11% found its usefulness to be slightly above average while 88.89% found it to be very useful.

### Khan Academy

 The fourth evaluation was on Khan Academy. The results of the examination were as shown in Table XXVIII below.

|  |  |  |
| --- | --- | --- |
| Number of Classes | Number | Percentage |
| 0 | 201 | 44.67% |
| 1 | 186 | 41.33% |
| 2 | 29 | 6.44% |
| 3 | 11 | 2.44% |
| 4 | 5 | 1.11% |
| 5 | 2 | 0.44% |
| 6 | 16 | 3.56% |
| Total  | 450 | 100.00% |

*Table XXVIII: Usage of Khan Academy*

 Only 4.00% had used Khan Academy in 5 classes and above. 44.67% (the majority) had no experience with the online tool while 47.78% had used it in 2 or less classrooms. 2.44% and 1.11% had used it in 3 and 4 classes respectively. The students further scored the online tool based on their perceptions of its usefulness to their learning. Table XXIX shows the results of the assessment.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment | 10 | 2.22% |
| 0 | 215 | 47.78% |
| 1 | 22 | 4.89% |
| 2 | 37 | 8.22% |
| 3 | 46 | 10.22% |
| 4 | 58 | 12.89% |
| 5 | 62 | 13.78% |
| Total | 450 | 100.00% |

*Table XXIX: Level of Usefulness of Khan Academy*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment / 0 | 24 | 9.64% |
| 1 | 22 | 8.84% |
| 2 | 37 | 14.86% |
| 3 | 46 | 18.47% |
| 4 | 58 | 23.29% |
| 5 | 62 | 24.90% |
| Total | 249 | 100.00% |

*Table XXX: Level of Usefulness of Khan Academy excluding the non-Users*

 Since a majority of the students had not used Khan Academy, only 26.67% classified the usefulness of Kahoot as above average while 47.78% did not find it useful. 13.11% found it to be below average while 10.22% found its usefulness to be average. 2.22% did not comment on the usefulness of the tool. Table XXX shows the percentage of the usefulness of Khan Academy amongst those that had used it. A majority (48.19%) perceived its usefulness to be above average while 18.47% found the usefulness to be average. 23.69% found its usefulness to be below average while 9.64% found it not to be useful or did not make a comment.

### Online Textbook

 The fifth analysis was on Online Textbook. The results of the examination were as shown in Table XXXI below.

|  |  |  |
| --- | --- | --- |
| Number of Classes | Number | Percentage |
| 0 | 210 | 46.77% |
| 1 | 123 | 27.39% |
| 2 | 73 | 16.26% |
| 3 | 22 | 4.90% |
| 4 | 5 | 1.11% |
| 5 | 3 | 0.67% |
| 6 | 13 | 2.90% |
| Total  | 449 | 100.00% |

*Table XXXI: Usage of Online Textbook*

 Only 3.56% had used Online Textbook in 5 classes and above. 46.77% (the majority) had no experience with the online tool while 43.65% had used it in 2 or less classrooms. 4.90% and 1.11% had used it in 3 and 4 classes respectively. The students further scored the online tool based on their perceptions of its usefulness to their learning. Table XXXII shows the results of the assessment.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment | 6 | 1.34% |
| 0 | 208 | 46.33% |
| 1 | 15 | 3.34% |
| 2 | 33 | 7.35% |
| 3 | 54 | 12.03% |
| 4 | 50 | 11.14% |
| 5 | 83 | 18.49% |
| Total | 449 | 100.00% |

*Table XXXII: Level of Usefulness of Online Textbook*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment / 0 | 4 | 1.67% |
| 1 | 15 | 6.28% |
| 2 | 33 | 13.81% |
| 3 | 54 | 22.59% |
| 4 | 50 | 20.92% |
| 5 | 83 | 34.73% |
| Total | 239 | 100.00% |

*Table XXXIII: Level of Usefulness of Online Textbook excluding the non-Users*

 Since a majority of the students had not used Online Textbook, only 29.63% classified the usefulness of Kahoot as above average while 46.33% did not find it useful. 10.69% found it to be below average while 12.03% found its usefulness to be average. 1.34% did not comment on the usefulness of the tool. Table XXXIII shows the percentage of the usefulness of Online Textbook amongst those that had used it. A majority (55.65%) perceived its usefulness to be above average while 22.59% found the usefulness to be average. 20.08% found its usefulness to be below average while 1.67% found it not to be useful or did not make a comment.

### ClassDojo

 The sixth evaluation was on ClassDojo. The results of the examination were as shown in Table XXXIV below.

|  |  |  |
| --- | --- | --- |
| Number of Classes | Number | Percentage |
| 0 | 426 | 94.46% |
| 1 | 15 | 3.33% |
| 2 | 4 | 0.89% |
| 3 | 2 | 0.44% |
| 4 | 1 | 0.22% |
| 5 | 0 | 0.00% |
| 6 | 3 | 0.67% |
| Total  | 451 | 100.00% |

*Table XXXIV: Usage of ClassDojo*

 Only 0.67% had used ClassDojo in 5 classes and above. 94.46% (the majority) had no experience with the online tool while 4.21% had used it in 2 or less classrooms. 0.44% and 0.22% had used it in 3 and 4 classes respectively. The students further scored the online tool based on their perceptions of its usefulness to their learning. Table XXXV shows the results of the assessment.

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment | 15 | 3.33% |
| 0 | 416 | 92.24% |
| 1 | 2 | 0.44% |
| 2 | 4 | 0.89% |
| 3 | 4 | 0.89% |
| 4 | 3 | 0.67% |
| 5 | 7 | 1.55% |
| Total | 451 | 100.00% |

*Table XXXV: Level of Usefulness of ClassDojo*

|  |  |  |
| --- | --- | --- |
| Level of Usefulness | Number | Percentage |
| No comment / 0 | 5 | 20.00% |
| 1 | 2 | 8.00% |
| 2 | 4 | 16.00% |
| 3 | 4 | 16.00% |
| 4 | 3 | 12.00% |
| 5 | 7 | 28.00% |
| Total | 25 | 100.00% |

*Table XXXVI: Level of Usefulness of ClassDojo excluding the non-Users*

 Since a majority of the students had not used ClassDojo, only 2.22% classified the usefulness of Kahoot as above average while 92.24% did not find it useful. 1.33% found it to be below average while 0.89% found its usefulness to be average. 3.33% did not comment on the usefulness of the tool. Table XXXVII shows the percentage of the usefulness of ClassDojo amongst those that had used it. A majority (40.00%) perceived its usefulness to be above average while 16.00% found the usefulness to be average. 24.00% found its usefulness to be below average while 20.00% found it not to be useful or did not make a comment.

# CONCLUSION

## Summary of Findings

 The first research question was to find out the most popular online study tools among students. The study results indicated that Google Classroom and Google Docs, Forms, Sheets, Present and Drive were the most popular with a usage of 99.56% and 99.12% respectively. Kahoot was the third most popular with a usage of 84.51%. The second research question was to assess whether the students find the use of technology in the classroom as useful. According to the study results, 70.35%, 86.07%, 58.76%, 26.67%, 29.63% and 2.22% of the respondents indicated the usefulness for Google Classroom, Google Docs, Forms, Sheets, Present and Drive, Kahoot, Khan Academy, Online Textbook and ClassDojo respectively. Based on the low usage of Khan Academy, Online Textbook and ClassDojo, a further assessment was conducted to examine the level of usefulness among those that had used the tools. The study indicated that 48.19%, 55.65% and 40.00% perceived the usefulness of the tools, respectively, to be above average. Therefore, the study postulated that the students perceive the use of technology in the classroom to be useful. The third research question was to determine the tools that the students found to be most effective. In this aspect, the popularity of the online tools was considered to be a driving factor in determining their effectiveness. To ascertain the most effective tool, the top three tools were assessed based on the students’ perceptions of their usefulness. Thus, Google Docs, Forms, Sheets, Present and Drive was found to be the most effective with 86.07% indicating that its usefulness was above average. The second and third were Google Classroom and Kahoot with above average usefulness scores of 70.35% and 58.76% respectively.

## Recommendations for Further Research

 The study postulated that the online learning tools are useful in students’ learning from the students’ perspectives. Thus, developers should consider developing more online tools and improving the existing ones to complement the traditional teaching practices. For further research, researchers should incorporate the perceptions of other stakeholders in the learning arena to have a global view of the impact of the online teaching tools on students’ learning. Moreover, the research should evaluate other online teaching tools such as Socrative, Prezi and Quizlet, among others. This will provide more in-depth knowledge regarding the subject.

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