



Google Sites and Wordwall.net – Online Tools for Learning Basic Integration

Bryan Jake Amaro¹, Margaret Bueno² and Eunice Mareth Querol-Areola³

^{1,2} Air Link International Aviation College, Pasay City, Philippines

³ UST Angelicum College, Quezon City Philippines

eunice.areola@ustangelicum.edu.ph

Abstract. Philippine education is not a stranger to various reforms and changes. One of the current educational trends is the implementation of online classes. The internet has been utilized to deliver lectures and discussions as opposed to the traditional face-to-face classroom setup. As the quarantine restrictions ease up, educational institutions are now implementing hybrid learning using the combination of onsite and online classes. Nevertheless, the Covid-19 pandemic opened the possibility of using online platforms in conducting classes. The researchers recognize the need for developing innovative “virtual” classroom strategies that can accommodate all math learners given their challenges in accessing the internet during online synchronous classes. An instructional material was crafted using Google Sites and Wordwall.net. Participants, who are Grade 11 students from the Science, Technology, Engineering, and Mathematics (STEM) strand, were asked to navigate through the material and evaluate the instructional tool in terms of effectiveness, efficiency, and level of satisfaction. The results of the study have shown that the participants found the material effective and efficient and that it brought satisfactory outcomes. With the proper utilization, Google Sites and Wordwall.net can be excellent tools for online education.

Keywords: Google Sites, Online Education, Sustainable Education, Wordwall.net.

1 Introduction

Education is a fundamental human value, a societal requirement, the foundation of a happy life, and a symbol of liberty. Integration of various organizations requires education [1]. Education is a process of receiving and giving methodical instruction as well as a process of sharing knowledge and information between teachers and learners. In many instances, it is the key to a successful future, and it opens up a plethora of options in our lives. Needless to say, people benefit a lot from education. It improves a person’s intellect and thinking, for example. It assists students in preparing for their career or their further studies after graduation. Better education means a better chance of employment. It comes along with more options in the career path that we can take. Without proper education, we may find ourselves struggling for survival or for even landing a quality job. Additionally, education provides us with high social prestige. As part of

our culture, those who are educated are more valued as a people than those who are not. Being educated gives people inherent respect from other people. As a further matter, education helps us to improve our morality and ethics. The more educated people are, the more they value education as a whole [2].

Philippine education is not a stranger to various reforms and struggles. Its transformation was a slow process shaped by centuries of colonialism and imperialism. From a historical perspective, education had been treated more as a privilege than a constitutional right. For a time, the Spaniards had been successful in keeping the Filipinos illiterate and uneducated. Educational opportunities were so limited that acquiring knowledge had become an exclusive domain of a select few [3].

Philippine education took another challenge when the Covid-19 pandemic began. The year 2020 was marked by significant challenges to global and national socio-political, economic, and educational landscapes [4]. Due to community quarantine restrictions and lockdowns brought on by the global health crisis, all educational institutions were forced to move away from the traditional face-to-face classroom setup and adopt a distant learning system. To preserve the health and safety of both students and teachers in the Philippines, the Department of Education (DepEd) issued policy directives prohibiting school activities that require physical attendance. The “victorious” launch of classes using various online learning modalities was favored despite calls for an academic freeze [5].

Even in times of crisis, UNESCO believes that educational quality, access, and system strengthening cannot be compromised (as cited in the MELCs Guidelines, 2020). As a result, the Department of Education changed the curriculum and established the MELCs (Most Essential Learning Competencies) for the School Year 2020 – 2021, which focused on the most important lessons for children to learn throughout their lives. Quality education must be provided to every student regardless of the school’s instructional method.

According to [5], educators continue to do their sworn responsibilities despite numerous concerns. They were able to prepare and deliver the courses despite issues with module quality, internet connectivity, and safety. Teachers are continually looking for the best techniques to make online learning valuable and successful because of such problems, particularly with devices and internet access.

In a study done by [6], the Philippines’ average internet speed was 2.8 Mbps. To put it into perspective, Thailand and Sri Lanka have an average internet speed of 7.4 Mbps while Malaysia has 4.3 Mbps. Because of this, the Philippines ranked 104th out of 160 nations, with developed Asian countries such as South Korea (23.6 Mbps) and Singapore (12.9 Mbps) ranked first and second, respectively. [6] also found that the absence of competition in the internet connectivity market, among other things, is one of the main reasons for the slow and expensive internet connection in the country.

According to [7], instructional delivery is one of the top concerns of teachers. They are concerned about the challenge of combining inquiry-based and experiential learning with technology, due to poor expertise in ICT. Teachers are apprehensive about using technology while ignoring the learning design. During synchronous classes, unpredictable internet delays and interruption results in students missing important discussions (Alvarez, 2020 as cited in [7]). This is a problem for both teachers and students, as most

classes, particularly in mathematics, require additional effort for explanations and illustrations.

Even under normal circumstances, according to Fritz et al. (2019) as mentioned in [8], mathematics is considered to be difficult by most learners. Since the beginning of online classes in the Philippines, the teaching and studying of this topic have been a source of worry. Although technological platforms are useful for starting dialogues and exchanging ideas in distant learning, Fedele and Li (2008) as cited in [8] claimed that they are insufficient for teaching mathematics as efficiently as face-to-face teaching.

Teaching many courses, for example, necessitates student and teacher discussions, presentations, and elaboration on learning outcomes, whereas teaching mathematics requires the teacher to communicate with students by writing words and symbolic language on the board while discussing the topic at the same time. Distance learning makes this difficult [9].

Now more than ever, we need a long-lasting solution to our problematic educational system. Due to quarantine restrictions, the sudden demand for remote instruction has promoted online learning, opened new doors for both students and teachers, and evaluated the present educational system [10]. According to Priess-Buchheit's (2020) as cited in [10], one of the possibilities for bridging the divide between students with and without internet access is hybrid learning. [11] stated that we must discover the concepts to assist construct a more humanistic, democratic, and ecological education paradigm. The idea of "sustainable education" is a great place to start.

[12] stated that sustainability necessitates a shift in our culture's underlying methodology, and hence in our educational thought and practice. Sustainability is more than simply another topic to add to an overburdened curriculum; it is a portal to a new perspective on curriculum, a strategy of teaching, organizational transformation, policy, and most importantly, ethos.

Sustainable education is a long-term solution to challenges being faced by the country's educational system. It is an educational strategy aiming at instilling in learners, schools, and society the values and inspiration to act for sustainability now and in the future [13].

In the era when devices and computers are abundantly used for various activities, it is about time that we heavily integrate technology into our teaching and learning process for sustainable education especially one that can be used in any educational modality. [9] claimed that learners benefit from e-learning in a variety of ways. Every student has the option of picking the location and time that is most convenient for him. It takes into account the learner's particular preferences. They also added that the desire for additional educational resources necessitates the development of educational websites and software. Websites allow students to access instructional materials from any location. It allows learners to watch lesson-related videos as many times as they need.

Google sites has been one of the most common platforms used by educators to sustain e-learning as a solution to this problem. Google sites is one of the Google suite for education products that has shown to be a helpful and user-friendly tool for constructing e-learning websites. It is free, ensures sustainability at little expense, easy to establish and manage, facilitates user cooperation, interoperable with other Google products, and

is searchable on the Google search engine. It may also be used to promote a fun and engaging learning experience [9].

The researchers recognize the need for developing innovative “virtual” classroom strategies that can accommodate all math learners given their challenges in accessing the internet during online synchronous classes based on the literature presented. Furthermore, the researchers believe that constructing interactive educational websites, notably Google sites integrated with Wordwall.net, can have a significant impact on the level of learning that students can acquire even when they are not physically in a classroom. Overall, the researchers developed instructional material for delivering a mathematics lesson called Basic Integration to Senior High School STEM students of PATTS College of Aeronautics using these two platforms. This usability research is intended to answer the following questions in order to determine if the educational content is a good match for mathematics learners in the midst of a pandemic.

How do the student-participants evaluate Google sites and Wordwall.net as instructional materials for learning Basic Integration in terms of:

- a. Effectiveness,
- b. Efficiency, and
- c. Satisfaction?

1.1 Google Sites

Google Sites is a tool that allows you to build a website as easily as editing a document. Groups, teachers, educational facilitators, and learners may easily collect a range of contents in one location including videos, calendars, presentations, attachments, and text, and share it with a group, an organization, or the entire world for viewing or editing. Internal project sites, classroom websites, and student ePortfolios may all be created with Google Sites.

1.2 Google Sites

Educators may use Wordwall.net to develop interactive games and printed materials for students. Teachers just need to submit content on this platform; the program will handle the rest. Depending on the sort of lesson to be covered, this program offers a variety of topics and game styles. Any web-enabled device, such as a computer, tablet, phone, or interactive whiteboard, may be used to play the interactives. They can be performed by students alone or by the teacher with students taking turns in front of the class. Meanwhile, the printables can be printed out directly or be downloaded as a Portable Document Format (PDF) file. They can be used as a partner in the interactive or as stand-alone activities. They can be used in conjunction with interactive activities or as stand-alone activities.

A template system is used to develop Wordwall.net activities. There are arcade-style games like Maze Chase and Airplane, as well as classroom management features like seating planning in the program. With a simple click, the instructor may transition from one template to another. This feature provides for activity diversification and time savings for the instructor. Furthermore, a teacher may modify any current activity to fit the

sort of course and teaching style. This program also has a range of themes with different images, fonts, and music, as well as additional features like setting a timer and modifying the gameplay.

2 Methodology

2.1 Research Design

This study employed a quantitative approach with a descriptive design since the only focus of the study is to test the usability of Google sites and Wordwall.net as online tools in learning Basic Integration in terms of effectiveness, efficiency, and satisfaction.

2.2 Participants

The participants of this study were the Grade 11 students of Science, Technology, Engineering, and Mathematics Strand (STEM) of PATTS College of Aeronautics. The institution is utilizing hybrid learning - a combination of synchronous and asynchronous online class sessions. A total of 43 student participants were chosen through convenience sampling. Based on the initial observation of their subject teacher, the Grade 11 students struggled to concentrate on the class discussion, especially through remote learning. There was little or no participation during online synchronous classes.

2.3 Procedures

The instructional tool was crafted using two web-based applications namely Google sites and Wordwall.net. The Google sites interface is used as the main face of the instructional website while Wordwall.net is used to embed games on the website that will serve as activities to evaluate student learning for every lesson. Furthermore, instructional videos were also embedded as supplementary aids. Deliberate proofreading and revisions were completed in preparation for the usability testing. The following procedures were done for the usability testing:

1. Upon the instruction of the subject teacher/instructional designer, the participants explored and utilized the instructional material on one synchronous class schedule.
2. The student-participants were asked to answer and complete the activities embedded on the website in a form of games.
3. The participants then answered the usability evaluation scale adopted from the study of [4] via a Google form questionnaire.
4. The results of the usability test were tallied and analysed using Microsoft Excel.
5. The resulting data from the analysis were summarized using the mean and presented in graphical and tabular form.

3 Results and Discussion

3.1 Effectiveness

Figure 1 shows that 75% of the respondents strongly agreed that the contents of the Google sites are rich and meaningful. On the other hand, only 2% disagreed that the contents of the instructional material are sufficient and relevant to the topic.

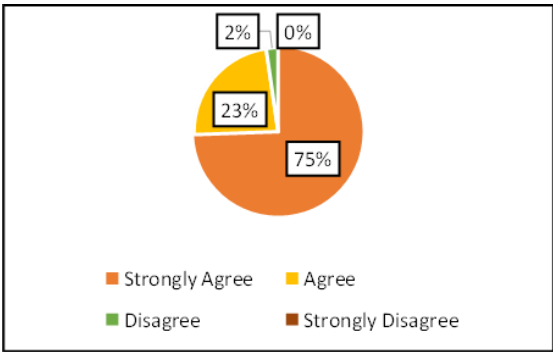


Fig. 1. The learning contents included on the site are rich and meaningful.

Figure 2 illustrates that 79% of the respondents strongly agreed that the lessons are clearly and systematically organized and delivered using the instructional tool. On the contrary, only 2% of the participants disagreed that the lessons are systematically organized and delivered.

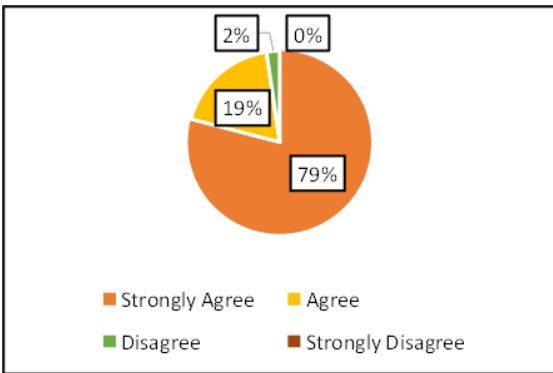


Fig. 2. The lessons are clearly and systematically organized and delivered.

Figure 3 reveals that 70% of the student-participants strongly agreed that the educational videos embedded in the instructional material helped them to achieve the objectives of the lesson while only 2% of the total respondents disagreed that the educational videos helped achieve the learning targets.

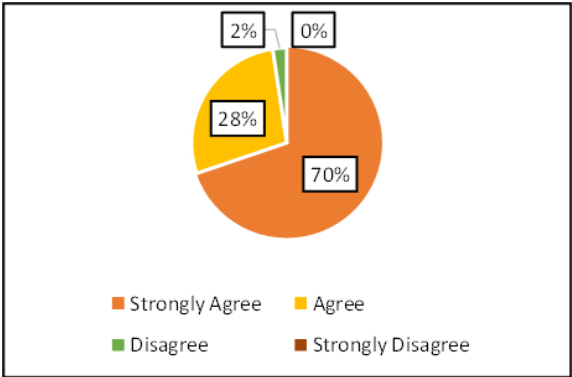


Fig. 3. The educational videos helped achieve the lesson objectives.

The relevance and suitability of the games and activities to the subject matter are revealed in Figure 4. The chart shows that 74% of the participants strongly agreed that the games and activities are suitable to evaluate learning and relevant to the subject matter. On the other hand, 5% disagreed that the games and activities included in the instructional aid are relevant and suitable to evaluate knowledge gained by the students.

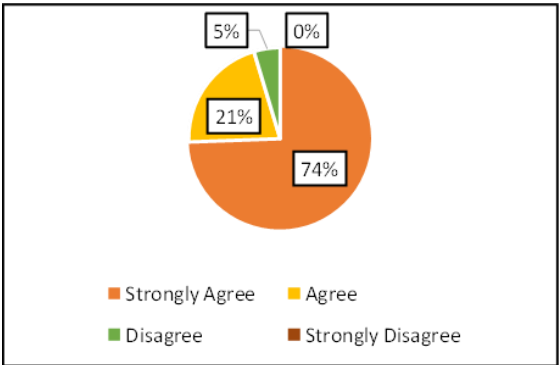


Fig. 4. The games and activities are relevant to the subject and suitable to evaluate learning.

Figure 5 shows that only 60% of the student-participants strongly agreed that they successfully completed the required task for each lesson indicated in the teaching tool while 12% disagreed that they successfully accomplished the required activity for every lesson.

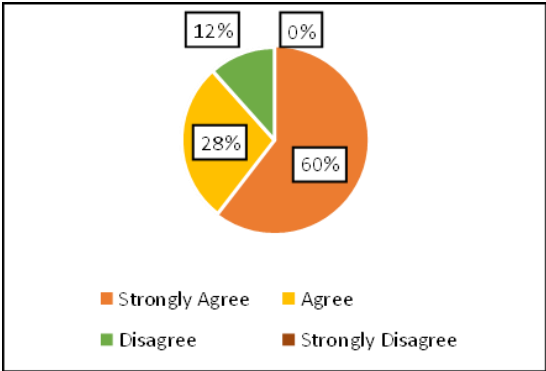


Fig. 5. Students’ success in completing the required task for each lesson.

The frequency of errors encountered in the instructional tool is conveyed in Figure 6. The illustration shows that 63% of the respondents strongly agreed that they encountered minimal to no errors while using the site. On the contrary, only 7% of the participants strongly disagreed that only minimal errors were encountered while utilizing the tool.

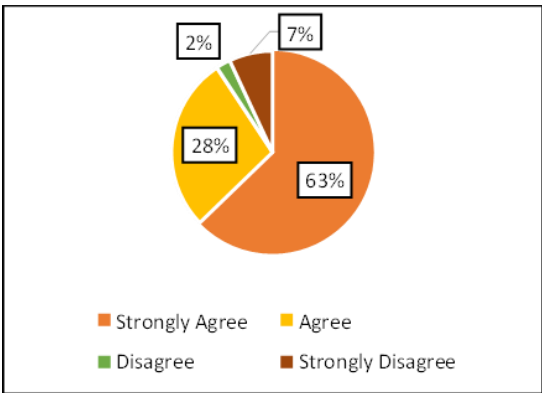


Fig. 6. Minimal or no encountered errors while using the site.

Table 1 reveals the usability of Google sites and Wordwall.net as instructional tools for teaching Basic Integration in Calculus in terms of effectiveness. The items were interpreted using the mean as a measure of central tendency in reference to the following intervals: 1.00-1.75 for Strongly Disagree; 1.76-2.51 for Disagree; 2.52-3.27 for Agree; and 3.28-4.00 for Strongly Agree. It was found that the item that garnered the highest average of 3.77 in terms of effectiveness is item number two which states that the lessons were clearly and systematically organized and delivered in the instructional tool. On the contrary, the item that garnered the lowest average of 3.47 is item number six which states that the student-participants encountered minimal to no errors while using

the site. Furthermore, all the six items under the test for effectiveness accumulated averages within the strongly agreed interval. Therefore, this means that Google sites and Wordwall.net are effective tools for teaching Basic Integration in Calculus.

Table 1. The usability of Google sites and Wordwall.net as instructional tools in terms of effectiveness.

Effectiveness	SA	A	D	SD	Mean	Interpretation
	4	3	2	1		
	Frequency					
1. The learning contents included on the site are rich and meaningful.	32	10	1	0	3.72	Strongly Agree
2. The lessons are clearly and systematically organized and delivered.	34	8	1	0	3.77	Strongly Agree
3. The educational videos helped me to achieve the lesson objectives.	30	12	1	0	3.67	Strongly Agree
4. The games and activities are relevant to the subject and suitable to evaluate learnings gained.	32	9	2	0	3.70	Strongly Agree
5. I successfully completed the exercises and tasks required for each lesson.	26	12	5	0	3.49	Strongly Agree
6. I encountered minimal/ no errors while using the site.	27	12	1	3	3.47	Strongly Agree

3.2 Efficiency

Figure 7 illustrates that 65% of the respondents strongly agreed that the instructional material is easy and less complicated to utilize while 2% disagreed that the teaching tool is less complicated to use.

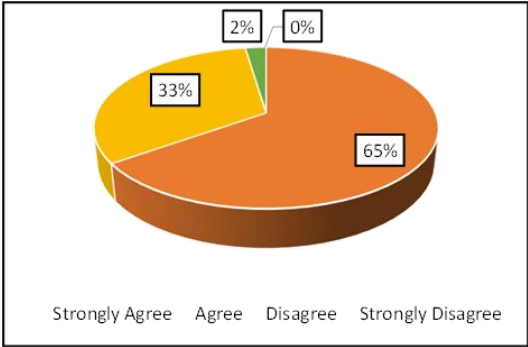


Fig. 7. The instructional material is easy to use and less complicated.

Figure 8 reveals the consistency of various functions of the site. About 72% of the student-respondents strongly agreed that the functions of the site are consistent and well-integrated. On the other hand, only 2% of the participants disagreed in terms of the consistency of the site’s various functions.

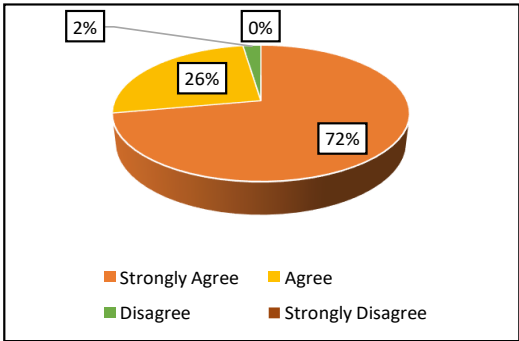


Fig. 8. Various functions of the site are consistent and well-integrated.

Figure 9 illustrates the respondents’ level of agreement in terms of the transitions applied on every page of the site. A total of 65% of the participants strongly agreed that there is a smooth transition from one page of the tool to another while only 2% disagreed that there is a smooth transition from one page to another.

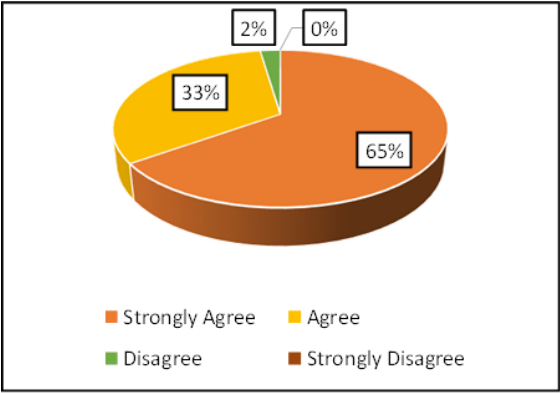


Fig. 9. Smooth transition from one page to another.

The students’ ability to use the instructional material without needing assistance from a technical person is illustrated in Figure 10. About 63% of the student-respondents strongly agreed that assistance is not needed from a technical person to be able to use the site. On the other hand, 2% strongly disagreed that they can use the site without the support of a technical person.

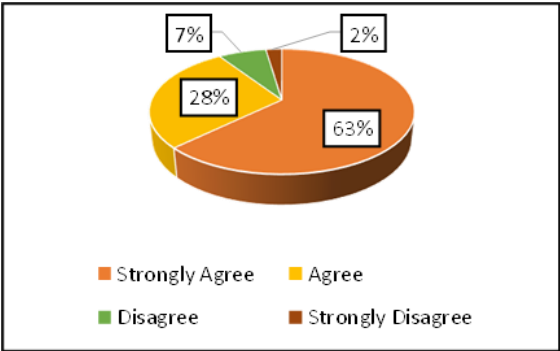


Fig. 10. Students’ ability to use the site without support from a technical person.

Figure 11 shows 68% of the student-participants strongly agreed that the functions and features of the site can be learned easily and quickly. On the contrary, only 2% disagreed that the instructional material can be explored easily and quickly.

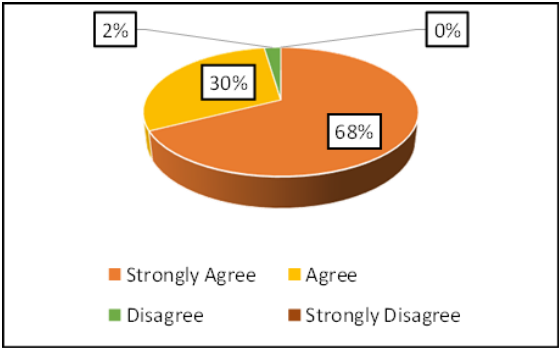


Fig. 11. The site can be learned easily and quickly.

Table 2 shows the usability of Google sites and Wordwall.net as instructional tools for teaching Basic Integration in Calculus in terms of efficiency. The items were interpreted using the mean as a measure of central tendency in reference to the following intervals: 1.00-1.75 for Strongly Disagree; 1.76-2.51 for Disagree; 2.52-3.27 for Agree; and 3.28-4.00 for Strongly Agree. It was found that the item which accumulated the highest mean of 3.70 is item two which states that the various functions of the site are consistent and well-integrated. On the contrary, the item that garnered the lowest mean of 3.51 is item four which states that the student-participants do not need any assistance or support from a technical person to be able to use and explore the site. Overall, all items listed under the test for efficiency got an average within the set interval for the highest level of agreement. Thus, Google sites and Wordwall.net are efficient tools to teach the topic of Basic Integration in Calculus.

Table 2. The usability of Google sites and Wordwall.net as instructional tools in terms of efficiency.

Efficiency	SA	A	D	SD	Mean	Interpretation
	4	3	2	1		
Frequency						
1. The instructional material is easy to use and less complicated.	28	14	1	0	3.63	Strongly Agree
2. Various functions in the site are consistent and well-integrated.	31	11	1	0	3.70	Strongly Agree
3. There is a smooth transition from one page to another.	28	14	1	0	3.63	Strongly Agree
4. I did not need the support of a technical person to be able to use this site.	27	12	3	1	3.51	Strongly Agree

5. I believe most people would learn to use this site easily and quickly.	29	13	1	0	3.65	Strongly Agree
---	----	----	---	---	------	----------------

3.3 Satisfaction

Figure 12 illustrates the level of agreement of the students-respondents in terms of the overall design, layout, and features of the instructional tool. A total of 72% of the participants strongly agreed that the overall design, layout, and features of the site are pleasant and engaging while 2% strongly disagreed that the overall interface of the site is engaging.

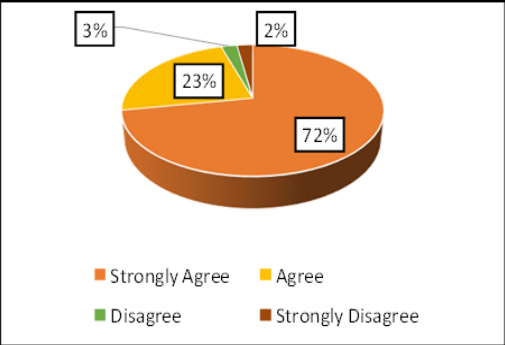


Fig. 12. The overall design, layouts, and features are pleasant and engaging.

The learners’ level of agreement in terms of their confidence in using the site is shown in Figure 13. It was found that 72% of the student-participants strongly agreed that they are confident in using the website. On the contrary, only 5% of the respondents disagreed that they felt confident while utilizing and exploring the site.

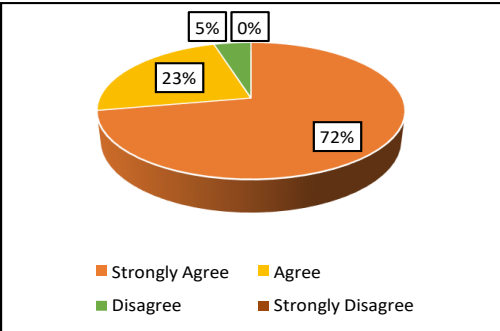


Fig. 13. The learners are confident in using the site.

Figure 14 illustrates that only 61% of the students strongly agreed that they would like to use the instructional material frequently. On the other hand, 2% strongly disagreed that they would want to utilize the teaching tool frequently.

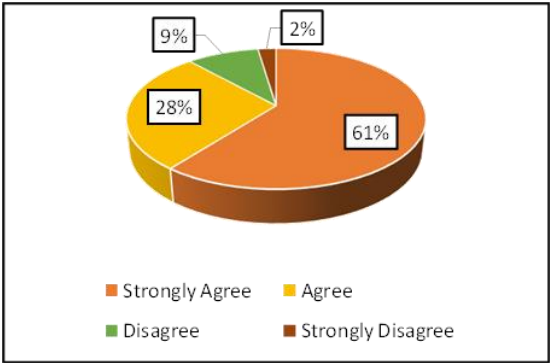


Fig. 14. The learners like to use the site frequently.

Figure 15 shows the learners’ level of agreement on whether the website is a good and credible instructional tool for teaching Basic Integration in Calculus. A total of 70% of the respondents strongly agreed that they are convinced that the website is a good and credible teaching tool while 5% disagreed that they are convinced that the website is a good and credible material for the subject matter.

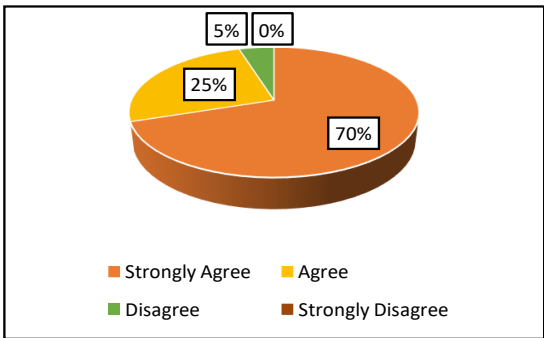


Fig. 15. The website is a good and credible instructional tool.

Table 3 shows the usability of Google sites and Wordwall.net as instructional tools for teaching Basic Integration in Calculus in terms of student satisfaction. The items were interpreted using the mean as a measure of central tendency in reference to the following intervals: 1.00-1.75 for Strongly Disagree; 1.76-2.51 for Disagree; 2.52-3.27 for Agree; and 3.28-4.00 for Strongly Agree. It was found that the item that garnered the highest average of 3.67 in terms of student satisfaction is item two which states that the students felt confident while using the instructional tool. On the other hand, the item that accumulated the lowest mean of 3.47 is item three which states the likelihood that the students will use the website frequently. Furthermore, all items garnered a mean

within the set interval for the highest level of agreement. Thus, Google sites and Wordwall.net have met the students’ desired qualities in teaching tools and therefore achieved satisfaction.

Table 3. The usability of Google sites and Wordwall.net as instructional tools in terms of students’ satisfaction.

	SA	A	D	SD		
Satisfaction	4	3	2	1	Mean	Interpretation
	Frequency					
1. The overall design, layouts, and features are pleasant and engaging.	31	10	1	1	3.65	Strongly Agree
2. I felt confident using the site.	31	10	2	0	3.67	Strongly Agree
3. I think that I would like to use the site frequently.	26	12	4	1	3.47	Strongly Agree
4. I am convinced that the website is a good and credible instructional material.	30	11	2	0	3.65	Strongly Agree

4 Conclusion

This case study presented the usability of the combined Google Sites and Wordwall.net as instructional tool that aids the learning of the topic of Basic Integration in Calculus. The effectiveness, efficiency, and satisfaction of students with the online instructional tool were tested and assessed.

The results of the usability test in terms of effectiveness showed that the lessons included on the website are relevant and meaningful and are clearly and systematically organized. Furthermore, it was also found that the learning contents are relevant to the subject matter and the games and activities are suitable to evaluate the learning of the students. These are the items that garnered high scores in terms of average. On the contrary, based on the result of the test, the items that accumulated low scores compared to other items are related to the success of the students in completing the required task for every lesson and the number of errors encountered while exploring the site. In conclusion, Google sites and Wordwall.net are found to be effective tools in teaching Basic Integration to senior high school STEM students.

Based on the results of the usability test in terms of efficiency, it was found that various functions of the website are consistent and well-integrated. Additionally, in reference to the responses of the student-participants, the learners are convinced that the

use of the site can be learned easily and quickly. These are the items that accumulated the high mean scores on the test while the item that garnered the lowest score is related to the students' need for support and assistance from a technical person to be able to navigate the site. However, as a whole, all the items under the tool efficiency obtained mean scores within the set interval for the highest level of agreement. Thus, Google sites and Word- wall.net are found to be efficient tools for teaching Basic Integration in an online learning modality.

The results of the usability test revealed that the learners are confident in navigating the instructional tool. This implies that the students can independently explore the website. The mentioned item garnered the highest mean score in terms of student satisfaction. On the other hand, the item that accumulated the lowest mean score is about the likelihood that the learners will frequently use the site. However, considering the mean scores of all the items under student satisfaction, it was established that the instructional website has met the students' needs and satisfaction.

5 Recommendation

Based on the literature and the results of the usability test, the following recommendations are suggested in terms of effectiveness, efficiency, and satisfaction:

1. In terms of effectiveness, the instructional designer should reevaluate the difficulty of the required task for every lesson. Even if the activities are in a form of games, the difficulty and appropriateness of the task should be considered. Additionally, the crafted teaching tool must undergo several stages of proof-reading and revision before being utilized as an aid in a virtual classroom.
2. In terms of efficiency, the researchers would like to recommend the conduct of evaluation regarding the ease of use. The tool must be properly assessed whether the need for support or assistance from a technical person is needed for the learners to be able to navigate the website easily.
3. In terms of satisfaction, the researchers would like to recommend adding more features that will help encourage the students to use the website frequently. The utilization of more game elements should be considered to make the experience more engaging and interactive.

In conclusion, Google sites and Wordwall.net are excellent tools for teaching Basic Integration in an online learning modality based on the results of the usability test. However, the said web-based applications should be explored more by instructional designers to be able to optimize their benefits and to look out for the possible disadvantages of the tools given the needs of the learners.

References

1. Bhardwaj, A.: Importance of Education in Human Life: a Holistic Approach. International Journal of Science and Consciousness 2(2), 23–28 (2016).

2. Al-Shuaibi, A.: The Importance of Education - Researchgate. (n.d.). Retrieved April 29, 2022, from https://www.researchgate.net/publication/260075970_The_Importance_of_Education.
3. Durban, J. M., Catalan, R. D.: Issues and Concerns of Philippine Education through the Years. *Asian Journal of Social Sciences and Humanities* 1(2), 61–69 (2012).
4. Cuaton, G. P.: Philippines higher education institutions in the time of covid-19 pandemic. Central and Eastern European Online Library. (2020). Retrieved April 30, 2022, from https://www.researchgate.net/publication/341843119_Philippines_Higher_Education_Institutions_in_the_time_of_COVID-19_Pandemic
5. Malipot, M.: One year after, schools remain closed but education continues. *Manila Bulletin*. (2021, March 10). <https://mb.com.ph/2021/03/10/one-year-after-schools-remain-closed-but-education-continues/>
6. Salac, R. A., Kim, Y. S.: A Study on The Internet Connectivity in The Philippines. *Asia Pacific Journal of Business Review*. (2016). Kyung Hee University Management Research Institute. <https://doi.org/10.20522/apjbr.2016.1.1.67>
7. De Villa, J.A., Manalo, F.B.: Secondary teachers' preparation, challenges, and coping mechanism in the pre – implementation of distance learning in the new normal. *IOER International Multidisciplinary Research Journal* 2(3), 144-154 (2020). DOI:10.5281/zenodo.4072845
8. Almarashdi, H., Jarrah, A.M.: Mathematics distance learning amid the COVID-19 pandemic in the UAE: High school students' perspectives. *International Journal of Learning, Teaching and Educational Research* 20(1), 292-307 (2021). <https://doi.org/10.26803/ijlter.20.1.16>
9. Bueno, M., Perez, F., Valerio, R., Areola, E. M. Q.: A USABILITY STUDY ON GOOGLE SITE AND WORDWALL.NET: ONLINE INSTRUCTIONAL TOOLS FOR LEARNING BASIC INTEGRATION AMID PANDEMIC. *Journal of Global Business and Social Entrepreneurship (GBSE)* 7(23), 61–71 (2022). [http://www.gbse.com.my/V8%20NO.23%20\(JANUARY%202022\)/Paper-288-.pdf](http://www.gbse.com.my/V8%20NO.23%20(JANUARY%202022)/Paper-288-.pdf).
10. Estrellado, C. J.: Transition to post-pandemic education in the Philippines: Unfolding insights. *International Journal of Scientific and Research Publications (IJSRP)* 11(12), 507–513 (2021). <https://doi.org/10.29322/ijsrp.11.12.2021.p12074>
11. Sterling, S., Orr, D.: Sustainable education: Revisioning learning and change. (n.d.). Retrieved April 30, 2022, from https://www.researchgate.net/publication/289505456_Sustainable_education
12. Gray, D., Camino, E., Colucci-Gray, L.: Science, society and sustainability: Education and empowerment for an uncertain world. Routledge (2011).
13. Tyagi, N., Verma, S.: Culturally responsive teaching. *Advances in Educational Marketing, Administration, and Leadership*, 312–331 (2022). <https://doi.org/10.4018/978-1-7998-9567-1.ch016>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

