



## APPLICATION OF WEB 2.0 TOOLS IN TEACHING 21<sup>st</sup> - CENTURY STUDENTS IN HIGHER EDUCATION IN CALABARZON, PHILIPPINES

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### ABSTRACT

*Quality education considered as a crucial factor to produce a competent professional to build a strong nation and to bring out the best way to get along with global competition. Thus, this study aimed to determine the current practices in using Web 2.0 tools in 15 selected Higher Education Institutions in CALABARZON, Philippines concerning communication and collaboration, creativity and innovation, and instructional design. It also considered its level of acceptability for classroom instruction as assessed by administrators, teachers, and students. The level of seriousness of the problems met in the integration relative to teachers' preparation, curriculum content and administrative support also evaluated. The research design was descriptive survey method with the use of a researcher-constructed questionnaire as the data gathering instrument. The method and instrument employed were deemed appropriate to determine the viability of providing the students with an alternative delivery of learning through Web 2.0 tools for instruction. Weighted mean, T-test and Probability values, Percentage and Standard Deviation, were the statistical tools used to test the hypothesis posited in this study. The hypothesis tested the significant differences between two groups of respondents regarding the extent of use of Web 2.0 tools in classroom instruction. Results revealed that to a very great extent, integration of Web 2.0 tools in the classroom promotes learner to interact, build a learning community and promotes active student participation in the classroom and increases student's productivity. Based on the findings and conclusions, the researcher developed an offline game-based interactive instructional material that supports instruction and collaboration and could be used to enhance students' critical thinking and problem-solving skills to achieve better learning outcomes.*

*Keywords: Web 2.0 tools, 21<sup>st</sup> Century students, Communication and Collaboration, Descriptive method, Higher Education, Philippines*

### INTRODUCTION

The advent rises of technology today paved the way for the improvement of the innovative tools in the education curriculum. The world's acceptance of technology enables the educator to overcome poor-quality education and turn to good quality of education using technology instruction in various discipline. Through Education, every student enhances the skills and abilities, to bring competence, and guide them with a positive attitude toward

learning. Quality education considered as an essential factor to produce competent professionals to build a strong nation and to bring out the best way to get along with global competition. Today, the Philippine Government, through the Commission on Higher Education (CHED) and the Department of Education (DepEd) pursue the overhauling of the educational system in the Philippines. It is because the Higher Education Institutions (HEIs) lag in the top 500 annual university rankings worldwide. (Times Higher Education (THE) and



even in the ASEAN, ranked the third least competitive country behind Singapore, Malaysia, and Thailand. (WEF Report, 2012). In the face of the sad state of higher education opportunities, the State takes cognizance of the need of the youth for a functional college education. This can be perceived in the following provision in Article XIV, Section 12 of the present Constitution of the Philippines, thus: The State shall regulate the transfer and promote the adaptation of technology from all sources for the national benefit. It shall encourage the fullest participation of private groups, local governments, and community-based organizations in the generation and utilization of science and technology. The mandate of the Constitution provides educators with legal bases to promote the expansion and democratization of educational opportunities in a more effectively and economically manner using innovative educational technologies. Today, college students' use Web 2.0 tools applications in their subjects more frequently than ever in and out of the classrooms. Applications such as blogs, instant messenger, online communities, video sharing tool, and web conferencing tool are gaining popularity. Students use them to create their contents on the web, contribute and collaborate with others, share their ideas and knowledge, and develop social networks via multiple formats of media and representation. This calls for the teacher as an agent of change need to innovate teaching and learning in every subject they taught. College students in the 21<sup>st</sup> - century demand lifelong learning on the click of a mouse. To effectively meet such demands at the same time keeping the institution's leverage in today's technological pace, institutions need to get potential student's attention and interest in their learning programs at the same time provide the teacher the necessary tools to innovate their teaching experience. Concurrently, the use of web-based tools as teaching strategies creates stimulating chance for better collaboration between students and faculty.

## OBJECTIVES OF THE STUDY

The primary purpose of this study was to determine the current practices of using Web 2.0 tools among fifteen select private Higher Education Institutions in Cavite, Laguna, Batangas, Rizal, and Quezon (CALABARZON), Philippines. Specific aims included the following: (1) to analyze the level of acceptability of Web 2.0 tools in classroom instruction as assessed by the school administrator, teachers, and students. (2) to find out the extent of use of Web 2.0 tools in the classroom instruction as evaluated by the teachers and students in terms of communication and collaboration; creativity and innovation; and instructional design. (3) to compare the assessment of the teachers and students regarding the use of Web 2.0 tools in classroom instruction. (4) to investigate the level of seriousness of the problems met in the integration relative to teacher's preparation; curriculum content and administrative support (5) to develop an interactive instructional material for better learning outcomes.

## METHODOLOGY

This study was utilized the descriptive method of research. Descriptive method was used to explain the level of acceptability of Web 2.0 tools to the school administrator, teachers, and students. It also a looked-for level of seriousness of the problems met in the integration relative to teachers' preparation, curriculum content and administrative support. Furthermore, this study used quantitative design employing statistical treatment which provides statistical results that are fundamental in determining a comparison between respondents' perceptions regarding the use of Web 2.0 tools in classroom instruction relative to communication and collaboration, creativity and innovation and instructional design. The sources of data are the responses from the test questionnaire. However, related literature from books, articles, and journal was used to substantiate the results and findings of this study. The respondents of the study were 55 administrators, deans, and chairpersons as a group, 530 college students and 155 teachers in select private Higher Education Institutions in

CALABARZON, Philippines. The respondents were selected using a stratified random sampling technique. On the other hand, the researcher initially secured the permit to conduct a study from the heads of the different Private Higher Education Institutions in CALABARZON. Upon approval, the researcher personally administered the questionnaires at a time agreed upon by the approving authority. Explicit instructions and motivations were given and explained aside from the instruction specified in the questionnaire for clarity. Likewise, the researcher conducted a follow-up interview for the selected administrator and teacher participants. The Weighted mean, Frequency Distribution, Percentage, Analysis of Variance (ANOVA), T-test and Standard Deviation are the statistical tools used to analyze the data gathered.

## RESULTS AND DISCUSSION

### 1. Level of Acceptability of Web 2.0 tools in classroom instruction as assessed by the administrators, teachers, and students

Integration of Web-based technologies in the classroom promotes learner to interact and build a learning community and promotes the administrators accepted active student participation in the classroom to a very great extent with the equal obtained weighted means of 4.51. Meanwhile, Web-based integration increases students productivity made the least with the weighted mean of 4.26 and accepted to a great extent. This result implies that the administrators of educational institutions believe in the capacity of Web 2.0 tools to encourage and support a healthy interaction among students and teachers to the extent of building a healthy and competitive learning community. This claim strengthened by the study conducted by Casey, G., & Evans, T. (2011). The study was pursued to investigate the use of Facebook, a Social Networking site, as a learning environment. These authors posit that as active participants in a global economy, there is an immediate need for students to be literate in new digital technologies. Therefore, incorporating Web 2.0 tools such as

social networking websites into the curriculum will benefit the student entering the workforce. On the part of the teachers, integration of Web 2.0 tools in classroom instruction accomplishes tasks more quickly as evidenced by the weighted mean of 4.36 and accepted to a great extent. On the other hand, Web 2.0 tools integration increased student productivity with a weighted mean of 3.89, the least and accepted to a great extent. This implies that most teachers surveyed believe that the use of Web 2.0 tools in classroom instruction expedite the accomplishment of tasks and other classroom-related responsibilities. With the fast pace of technology, it is no doubt that many enrichment activities and tasks could be made more accessible by Web 2.0 tools. For the students, integration of Web 2.0 tools provides collaborative learning opportunities with the computed average of 4.14 which was accepted to a great extent. On the other hand, integration of Web 2.0 tools accomplishes tasks more quickly was accepted to a great extent with an average of 3.90. Student-respondents believe that the integration of Web 2.0 tools in classroom instruction can provide collaborative learning opportunities for them. This signifies that students recognize the helpful utilization of Web 2.0 tools so as they can work collaboratively to gain learning. These findings show that common among the three groups of respondents is the goal of achieving quality education for the students through the integration of the Web 2.0 tools in classroom instruction. It is also safe to conclude that what they all want is to have students who are equipped with knowledge, skills, and values which can be done through the integration of web 2.0 tools for instruction.

### 2. Extent Use of Web 2.0 tools in Classroom Instruction

#### 2.1 In terms of Communication and Collaboration

In totality, the teachers and students used Facebook to a great extent to create profiles, upload photos and video, send messages and keep in touch with other educators and students



with an average perception of 3.95. It is very undeniable that Facebook is now the most popular form of social networking site for people of all ages and professions. It supported by the fact that elderly people from different countries and races are utilizing FB to communicate with their friends and relatives. More for young people who can stay almost 24 hours in front of their computers and gadgets just to get connected to their friends, relatives, and chat mates. Facebook is now also the easiest way to transfer messages, photos, videos, documents, and files. It is no doubt that in this study FB is being utilized by most teachers regarding communication and collaboration. The lowest item has an average of 2.97 which is they used Instagram to a moderate extent to take pictures and videos, and share them on a variety of social networking platforms. On the other hand, Instagram is the least of the Web 2.0 tools being used by teachers in instruction because Instagram is just usually focused on the display of pictures. Also, on Instagram, there are complicated or hard-to-follow policies and instructions like the use of a hashtag, tagging of friends and you must get many followers who would be able to see your posts. Comparing it with the use of Facebook, it is easier to use because in Facebook the application is user-friendly. These findings reinforced by the study of Mazman, G., & Usluel, Y. K. (2010) which concentrates on the educational use of Facebook. The authors posit that social network tools enhance education by making interaction, collaboration, active participation, information sharing, and critical thinking possible. It is no doubt that the use of Facebook could be of great help in terms of collaborative learning and communication.

### 2.1. In terms of Creativity and Innovation

Combining the perceptions of the teachers and students, they used Youtube videos to a great extent to introduce complex subjects with an average of 3.95. The findings imply that the use of YouTube is both of great extent both to the teachers and student-respondents. The fact that YouTube utilizes videos can be the most

significant factor why both respondents choose it as a Web 2.0 tools to be used in terms of creativity and innovation. With the fast pace of technology, using videos can be one of the easiest ways and the most innovative to give instructions and lessons. The lowest was on they used Auto Stream to publish and share PowerPoint presentations as a video with an average of 3.17. This can be attributed to the fact that Auto Stream is not famous as compared to YouTube.

### 2.2 In Terms of Instructional Design

Deducing the result, the teachers and students used to a great extent the Internet search using Google, Yahoo, Mozilla Firefox or other search engines with the highest weighted mean of 4.12. This could mean that both sets of respondents prefer to utilize the said search engines as part of the instructional materials inside the classroom. Moreover, the use of Web 2.0 tools can be an ideal avenue for lifelong learning because it maintains interactive and collaborative learning. This provides students learning experiences appropriate for this digital age. Additionally, Web 2.0 tools allow students to gain educational experiences that go beyond the four corners of the classroom. This type of innovation is beneficial and pertinent to universities worldwide that are in the stage of advancing their curriculum. Web 2.0 tools support a more playful and experimental approach to learning and allow learners to present themselves and their insights in original ways. This could mean that both sets of respondents prefer to utilize the said search engines as part of the instructional materials inside the classroom. On the contrary, the weakness was on they used Triptico to help create, share, and edit interactive lessons with a weighted mean of 3.03, because both teachers and students are not yet so familiar and acquainted with Triptico as Web 2.0 tools that is why there is just a moderate extent of usage of the said web application.

### 3. Comparison of Assessment in the use of Web 2.0 tools in Classroom instruction



Table 1. Comparison of Assessment

Variables	Weighted Mean		t-	t-	p-	Significance	Decision
	Teachers	Students	value	Tabular	value		
Communication and Collaboration	3.59	3.47	0.79	2.10	0.44	Not Significant	Fail to Reject Ho
Creativity and Innovation	3.43	3.55	-0.93	2.10	0.37	Not Significant	Fail to Reject Ho
Instructional Design	3.29	3.54	-1.63	2.10	0.12	Not Significant	Fail to Reject Ho

Table 1 reveals the comparison between the respondents' perceptions regarding the application of Web 2.0 tools in classroom instruction. As seen in the table, the probability values of 0.44 for communication and collaboration, 0.37 for creativity and innovation and 0.12 for the instructional design were higher than the probability value of 0.05; thus the hypothesis was failed to reject. These safely generalized that the perceptions of the respondents on the application of Web 2.0 tools in classroom instruction have no significant differences in terms of communication and collaboration, creativity and innovation and instructional design.

#### 4. Level of seriousness in Problems met in the Application of Web 2.0 tools

##### A. Teacher's Preparation

##### 4.A.1. In Terms of ICT Facilities and Resources

Wrapping-up the result, the teachers and students assessed that slow internet connection was a moderately serious problem with the highest weighted mean of 2.89 while inconvenient computer laboratory was found to be a slight serious problem with a weighted mean

of 2.29. The findings reveal that students and teachers are both encountering problems in terms of the slow internet connection. Though it has a verbal interpretation of the moderately serious problem, it is still a problem because using Web 2.0 tools as part of the learning process always needs an internet connection.

##### 4.A.2. In terms of ICT Skills and Knowledge

In terms of ICT Skills and Knowledge, there was a contradiction in the results of the two sets of respondents. While for teachers, uncomfortable in using a computer because some students are more competent with ICT got the least weighted mean 2.09 with the verbal interpretation of slightly serious problem; for students, the same item got the highest weighted mean of 2.58 which is a moderately serious problem. This shows that teachers are more confident in using Web 2.0 tools in classroom instruction, but students are not yet that ready and confident in utilizing Web 2.0 tools. If this would be the case, problems may also arise in the course of implementing the Web 2.0 tools for instruction. This should be addressed appropriately because the students are one of the primary reasons why web-based technology should be employed. They are supposed to be very skillful not only in the subject matter that they

have to take but in the use of technology to prepare them as the 21<sup>st</sup> - century workers. Acquiring the skills in information communications and technology is advantageous for them as it is a life-long learning skill that can use in other fields of work.

## B. Curriculum Content

### 4.B.1. In Terms of Instructional Design

Summing up, difficulty in using Web 2.0 tools to facilitate student's learning got the highest average of 2.52 which was considered as a moderately serious problem. Meanwhile, a lack of interest in developing a new learning environment that utilizes Web 2.0 tools as flexible tools in learning made the least weighted mean of 2.16. Also, the said item made the least standard deviation of 1.18 which implied that this was the item wherein the respondents' perceptions were more compressed compared to the other items. The result shows that teachers encountered difficulty in using Web 2.0 tools to facilitate student's learning and they consider it as a moderately serious problem. A teacher's role is always to facilitate learning inside the classroom. While it is true that they have to utilize web-based technology, they must understand that they have to use them to improve their teaching strategies. However, it is important to point out that Web 2.0 tools are used to enhance teaching styles, and "should not replace the role of the teacher." For the students' perceptions, most of the items got the verbal interpretation slight serious problem. This can be attributed to the fact that most students now take their stand of utilizing Web 2.0 tools since they now belong to the "net generation" wherein they fully acknowledge the importance of using technology for them to easier learn their lessons.

### 4.B.2. In Terms of Creativity and Innovation.

For the overall result, lack of knowledge in integrating interactive educational lessons into instruction gained the highest weighted mean of 2.41. On the other hand, insufficient knowledge in using Web 2.0 tools to promote collaborative

instruction in the classroom got the least average of 2.12, the most compressed among the other items as evidenced by the least standard deviation of 1.27. Lack of knowledge in integrating interactive educational lessons into instruction was found out to be the significant problem of teachers in terms of incorporating Web 2.0 tools with regards to creativity and innovation. This was caused by the limited skills and knowledge of the teachers in the utilization of computers and other gadgets. The teachers must be the first one to acquire computer literacy and skills to be able to impart them to their students. This was supported by the claims of Kiraz & Ozdemir (2006) who both agreed that making computer labs available in Philippine schools is not enough. It is essential for teachers to understand the precise role of Web-based technologies so that they can effectively cope with innovations in teaching students. On the part of the students, lack of interest in using Web 2.0 tools to motivate and increase students' technology skills and knowledge got the least weighted mean. This means that they do not find difficulty in this item. It is because they are willing to use technology applications like Facebook, YouTube or Instagram. This reinforced by the study conducted by Liccardi, I., Ounnas, A., et.al (2007). The findings indicated that with the emergence of social networking sites, students could change their studying away from face to face studying group to social web-based learning group. In other words, social networking sites can perform as a tutorial instrument for web-based learning.

## C. Administrative Support

Summing-up the result, lack of funds to give focus on technology integration was considered a moderately serious problem with a weighted mean of 2.52. On the other hand, lack of interest in providing training and technical support specialist to help teachers with technical problems about using technologies was found to be a slight serious problem which got the least weighted mean of 2.24. The findings reveal that the most common problem encountered by both the teachers and the students is on the funds that

the administration can offer to give focus on the integration of technology in classroom instruction. This problem is also the same problem encountered by most of the educational institutions in the country. When there are problems like lack of funds, other aspects like the facilities, training, and materials could also step in as significant constraints. On the other hand, lack of support for the teacher to attend training/seminars about the latest technology to support student learning got the least average of 2.17 which was considered as a slight serious problem. This item also gained the least standard deviation of 1.42 which implied that the perception of the teachers regarding this item was compressed. The findings reveal that the respondents encountered problems regarding the support of the administrators to attend training and seminars to adopt the 21<sup>st</sup>-Century skills and knowledge that may use them for the innovation of the teaching and learning process. For the students, lack of interest of the teacher in creating and updating lesson plans, exams and other teaching aids using technology received the weighted mean of 2.30 which was considered as a slight serious problem. This item also got the standard deviation of 1.34 which implied that the perceptions of the students regarding this item were compressed. The findings supported by the study of Geijsel and Meijers (2005) that the integration of technology into blended learning classrooms engages teachers for preparing students for the twenty-first century and focus much more strongly on student exploration and learning. The teachers perceived a lack of interest in enhancing knowledge in using educational Web 2.0 tools to promote collaborative instruction in the classroom considered as a slight serious problem which showed the weighted mean of 2.32. This item also gained the least standard deviation of 1.54 which implied that this item was compressed.

## 5. ACTION PLAN

Based on the findings and conclusions, the researcher conducted a training/seminar workshop on how to use and integrate Web 2.0

tools in classroom instruction to enhance students' learning in the faculty of select Higher Education Institutions. The researcher also developed an offline game-based interactive instructional material that supports instruction and collaboration and could be used to enhance students' critical thinking and problem-solving skills to achieve better learning outcomes.

## CONCLUSIONS

Based on the findings of the study, the following conclusions were made:

1. The three groups of respondents have positive attitudes towards the acceptability of Web 2.0 tools to classroom instruction.
2. There is no significant difference in comparing the responses of the teachers and students regarding the use of Web 2.0 tools in classroom instruction in terms of communication and collaboration, creativity and innovation and instructional design
3. The teachers need training/seminars about the use of Web 2.0 tools to adopt the 21<sup>st</sup> - century skills and knowledge.

## RECOMMENDATIONS

The following were recommended based on the conclusions drawn:

1. School administrators/owners should provide the necessary infrastructure, technical support; proper leadership, time, and promote access to available facilities to encourage teachers to integrate Web 2.0 tools for instruction.
2. The administrator and faculty of the Private Higher Institutions especially those who shall facilitate learning should be given more focused training in the use of technology in the classroom.
3. The teacher should create more learning opportunities and more time using technology for instruction.

## REFERENCES

- Casey, G., & Evans, T. (2011). *Designing for learning: Online social networks as a classroom environment*. International Review of Research in Open and Distance Learning, 12 (7), 1-26.
- Commission on Higher Education (2013) Republic Act 7722, *Higher Education Act of 1994*. Republic of the Philippines Congress of the Philippines, Metro Manila.
- Donnelly, D., McGarr, O., & O'Reilly, J. (2011). *A framework for teachers' integration of ICT into their classroom practice*. Computers & Education, 57(2), 1469-1483.
- Geijssel, F. and Meijers, F. (2005). *Identity learning: the core process of educational change*. Educational Studies, 31(4), pp.419-430.
- Kiraz, T. & Ozdemir, S. (2006). *Enhancing Collaboration and Skill Acquisition Through the Use of Technology*. Journal of Technology and Teacher Education, 14(2), 407-433.
- Liccardi, I., Ounnas, A., Pau, R., Massey, E., Kinnunen, P., Lewthwaite, S., Midy, M. A. & Sarkar, C. (2007). *The role of Web 2.0 technologies in students' learning experiences*.
- Mascololol & Fisher (2005). *Teaching with Technology: Creating Student-centered classrooms*. New York: Teachers College Press
- Mazman, G., & Usluel, Y., K. (2010). *Modeling educational usage of Facebook*. Computers & Education, 55(2), 444-453
- O'Reilly, T. (2018). *What Is Web 2.0*. [online] O'Reilly.com. Available at <https://www.oreilly.com/pub/a/web2/archiv>
- e/what-is-web-20.html [Accessed 10 Nov. 2018].
- Philippine Constitution (1987). *Article XIV Education, Science and Technology, Arts, Culture and Sports*. Rex Book Store. Manila

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