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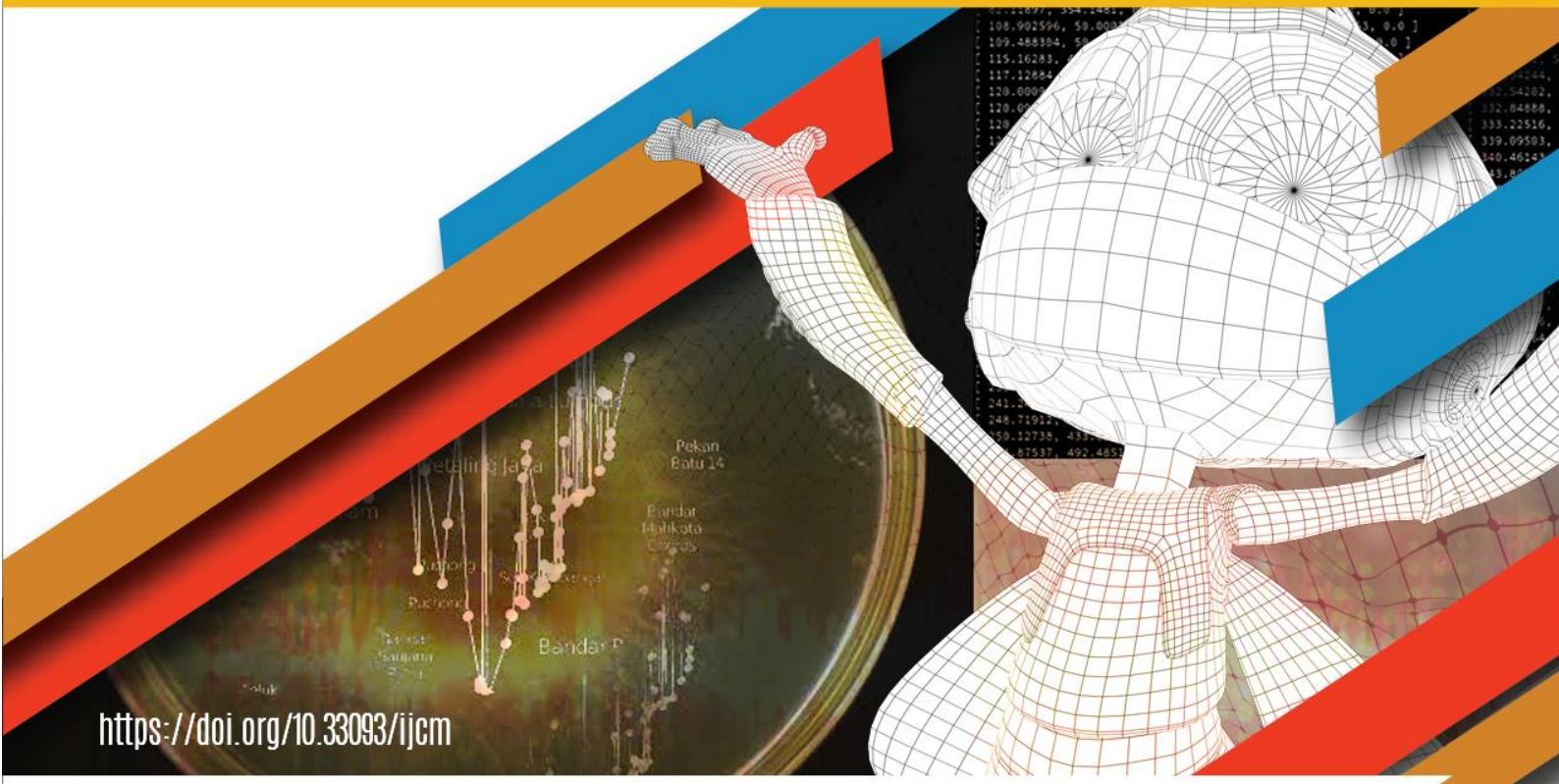

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Aim and Scope

The International Journal of Creative Multimedia (IJCM) is a peer-reviewed open-access journal devoted to publish research papers in all fields of creative multimedia, including Digital Learning, Film & Animation, Media, Arts & Technology and Visual Design & Communication. It aims to provide an international forum for the exchange of ideas and findings from researchers across different cultures, and encourages research on the impact of social, cultural and technological factors on creative multimedia theory and practice. It also seeks to promote the transfer of knowledge between professionals in academia and industry by emphasising research where results are of interest or applicable to creative multimedia practices. We welcome all kinds of papers that connect academic researches with practical and industrial context in the field of creative multimedia. The scope of the IJCM is in the broad areas of Creative Multimedia following the five major thematic streams, includes but not limited to:

- Digital Learning
- Media, Arts & Technology
- Games and Virtual Reality
- Cinema and Film Studies
- Animation and Visual Effects
- Visual Design and Communication

Foreword from Digital Learning Editorial Team

Greetings from the Editors and welcome to the Special Issue on Digital Learning in the 21st century. In this Issue, we present papers from international and local researchers focusing on research papers in areas of education technology, learning analytics, e-learning, engineering, IT, business and management, creative multimedia and many other domains that seek to improve the learning process of the learner with technologies. These papers were presented in the ELITE 2019 International Conference held in Multimedia University, Cyberjaya, Malaysia on October 2, 2019, in conjunction with the 2019 IDE4TE International Exhibition on Oct 1, 2019. Themed, "Empowering Learning, Innovating Teaching Environments", this event showcased best practices of Malaysian Universities, particularly from the network of Industry Driven Education Alliance (GLU iDE4) comprising of Universiti Teknologi Petronas (UTP), Universiti Multimedia (MMU), Universiti Tenaga Nasional (UNITEN) and Universiti Kuala Lumpur (UniKL), as well as from international presenters from China, India, Bangladesh and Maldives.

The papers presented in this Special Issue centred around 5 sub-themes; 1) Innovative Pedagogies & Instructional Design, 2) New Roles of Teachers, 3) Redesigning Curriculum for Education 4.0, 4) Emerging Technologies In The Classroom, and 5) Designing Learning Spaces for 21st Century Education, and are very timely articles for readers interested in adapting technology in today's classrooms. We hope that these papers will provide further insight and contributions to the knowledge base in these fields and we hope you enjoy reading them.

Prof. Ts. Dr. Neo Mai, Multimedia University, Malaysia

Professor Dr. Neo Mai is the Director for Academic Development for Excellence in Programmes and Teaching (ADEPT) for Multimedia University, and Professor in the Faculty of Creative Multimedia, and the Institute for Digital Education and Learning (IDEAL). Prof. Mai is the Director of the award-winning MILE Research lab and founding Chairperson form the CAMELOT (Centre for Adaptive Multimedia, Education and Learning cOntent Technologies) Research Centre. Prof. Mai's research interests are in the design of constructivist learning environments, micro-learning, team-based learning and web-based education. She was the recipient of the 2014 Excellent Researcher Award, an AKEPT Certified Trainer for Interactive Lectures (Level 1, 2, 3), an HRDF certified trainer and is certified in Team-Based Learning from the Team-Based Learning Collaborative, USA.

Dr. Gan Chin Lay, Multimedia University, Malaysia

Dr. Gan Chin Lay is a Senior Lecturer affiliated with the Faculty of Business, Multimedia University. Her main research interest is in learning analytics, particularly related to technology-enhanced student-centered learning environments. Her research domains include teaching and learning issues such as student engagement, and educational technology integration frameworks.

Dr. Liew Tze Wei, Multimedia University, Malaysia

Dr. Liew Tze Wei is a Senior Lecturer at the Faculty of Business, Multimedia University, Malaysia. He is leading the Human-Centric Technology Interaction Special Interest Group, in addition to serving as the collaboration & innovation coordinator and research & innovation committee member in the faculty. His research interests and contributions fall within learning sciences, human-computer interaction, and media psychology; with a strong focus on experimental research approach.

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International Journal of Creative Multimedia

Web 2.0 Tools in Classroom: Enhancing Student Engagement through Technology Enabled Active Learning

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Abstract

The essentiality of teaching is to make student learning possible. This can be achieved by ensuring student engagement during lessons. Due to the paradigm shift in learning towards student-centred learning, pedagogical strategies need to be adopted to create a learning environment where students can be active learners. Hence, 21st century teachers are expected to be capable of enhancing active learning. As current learners accept technology; adapts to it, uses it to complete tasks in new and creative ways, pedagogical strategies such as active learning needs to be implemented in a technology enabled learning environment. This paper looks into the two cycles of action research, conducted to improve student engagement by creating learning activities using Web 2.0 tools to promote active learning among students, which in turn would enhance their engagement within the class. The purpose of the first cycle was to design learning activities using web 2.0 tools and evaluate these activities on the levels of active learning. Evaluators agree that each activity promotes active learning with a combination of low complexity, medium complexity and high complexity levels. The purpose of the second cycle was to measure the levels of student engagement when the learning activities were implemented within the classroom. Results suggest that they were highly engaged with performance of the highest level.

Keywords Active learning; Student engagement; Web 2.0 tools; Technology enabled learning

Introduction

In order to foster learning among students, it is important to keep students associated with the course. For this purpose, student engagement is considered the most important element (Kehrwald, 2008). Lack of

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engagement within the course is among factors that contributes to students' disengagement, withdrawal, and failure in school (Skinner, Furrer, Marchand, & Kindermann, 2008). In general, student engagement is defined as "the extent to which students actively engage by thinking, talking, and interacting with the content of a course, the other students in the course, and the instructor." (Dixson, 2015) Due to criticality of student engagement for student learning (Dixson, 2015), helping students to engage in learning has become an important issue (Henrie, Halverson, & Graham, 2015). Hence, teachers and instructional researchers constantly look forward for ways to help students engage in learning and ways to measure their engagement (Dixson, 2015). After all, the aim of teaching "is to make student learning possible" (Ramsden, 2003).

In order to understand effective pedagogical strategies to increase engagement of learners, it is important to understand the learners and how they learn (Frick, Birt, & Waters, 2017). During the 20th century, higher education institutions underwent a paradigm shift with the application of student-centred learning approaches (Aguti, Walters, & Wills, 2014) instead of instructor-centred. This constructive approach of learning explains that knowledge and understandings are actively constructed and reconstructed by student's learning activities (Biggs, 2012). The learning environment should be designed to provoke student-centred approach where students are expected to be active learners and take responsibilities for their own learning experience (Keengwe, Onchwari, & Agamba, 2014).

Hence, 21st century teachers are expected to be capable of enhancing active learning (Virtanen, Niemi, & Nevgi, 2017). "Active learning is any instructional method that engages students and includes them as active participants in the learning process: students themselves are agents of the learning, and the teacher facilitates this process" (Prince, 2004). There are evidences supporting the improvement on student-teachers' learning with the implementation of active learning concepts (Virtanen, Niemi, & Nevgi, 2017).

The 21st century is driven by information and powered by technology; therefore to make 21st learners as an effective participant, there is a need for a change in teaching, learning and assessment (Kivunja, 2015). Since, 21st century learners accept technology; adapts to it, uses it to complete tasks in new and creative ways, pedagogical strategies such as active learning needs to be implemented in a technology enabled learning environment.

Working as a lecturer for the past four years, the researcher observed lack of student engagement when traditional mode of passive lecturing was used. It seems that they were not satisfied and were not motivated to learn. Hence, with the aim of finding a solution to enhance student engagement in classroom by promoting active learning through a technology enabled learning environment, an action research was initiated. This paper presents the two cycles of the action research which the researcher conducted in improving student engagement by creating learning activities using Web 2.0 tools that could promote active learning among students which in turn will enhance their engagement within class.

Literature review

Active Learning

The concept of active learning is defined from different perspectives including methods of teaching to student engagement processes. According to Prince (2004) active learning can be defined as any instructional method where students become the agents of learning propelling their learning forward through structuring and critical reflection while the teacher becomes the facilitator (Virtanen, Niemi, & Nevgi, 2017). In addition, active learning theories incorporates cooperative action and collaborative problem solving and other social elements of learning (Niemi, 2012, as tools for attaining deeper learning processes.

The Cone of learning proposed by Dale (1969) shows that active learning contributes to learning retention by students. Active learning activities include individual and collaborative activities such as discussions, presentations, simulations and tutoring, whereas students involved in passive learning tasks such as attending to lectures, viewing art, graphs and maps retain only about 10% to 30% of what they learn. (Shaaruddin & Mohamad, 2017).

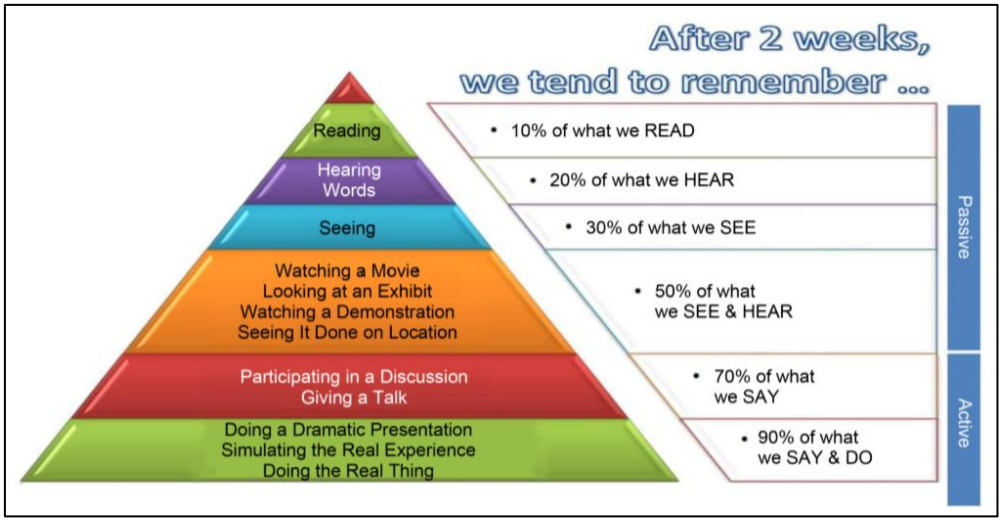

Figure 1 The Cone of Learning by Dale (1969)

Student Engagement

Student engagement refers to the investment or commitment, participation, or effortful involvement in learning (Henrie, Halverson & Graham, 2015). Student engagement is critical to student learning and literature agrees that in order to stimulate and endure student engagement, teaching must be effective thus students become good learners. To consider student engagement within the classroom, Handelsman, Briggs, Sullivan, and Towler's (2005) identified four main dimensions of engagement; skills engagement (keeping up with readings, putting forth effort); emotional engagement (making the course interesting, applying it to their own lives); participation/interaction engagement (having fun, participating actively in small group discussions); and performance engagement (doing well on tests, getting a good grade) based on exploratory factor analysis.

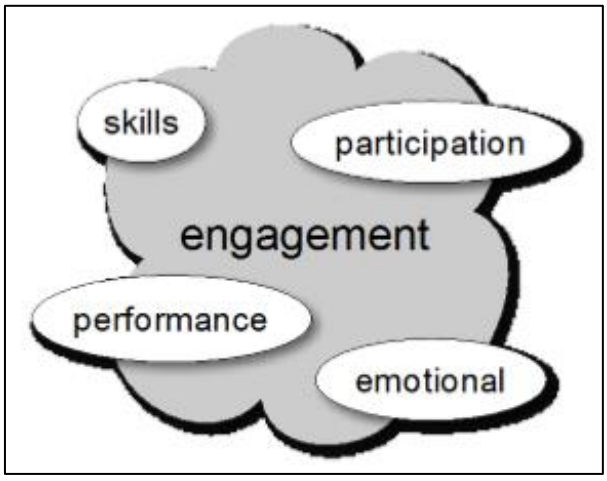

Figure 2 Four Dimensions of Student Engagement by Handelsman, Briggs, Sullivan & Towler's (2005)

Technology Enabled Learning

"Technology-Enabled Learning refers to the application of some form of digital technology to teaching and/or learning in a formal, non-formal or informal educational context" (Kirkwood & Price, 2016).

Technology-Enabled Learning (TEL) describes the use of technology to support students' learning. The word enabled refers to facilitation making learning possible with the help of technology. It does not imply the value judgment that the word enhanced necessitates. TEL is just about different ways of serving existing learners or, potentially, providing opportunities for learners who were previously regarded as being "out of reach" - that is, those learners who typically have little to no access to educational opportunities because of a variety of circumstances – in order to make learning possible (Kirkwood & Price, 2016).

Web 2.0 Tools

The rapid advancements in technology and the consequential evolvement of the World Wide Web has made it the ubiquitous platform for work, commercial, entertainment and academic purposes, with web 2.0 standards being the norm. Web 2.0 with its social interactivity, collaboration and information sharing capacities have given birth to a generation of internet with increased social networking and information sharing spaces including Blogger, Wikipedia, Facebook and YouTube among others.

Before the development of Web 2.0 tools, the main focus of computer systems was on data management, information and creation of explicit knowledge. Web 2.0 changed this with the focus shifted towards the development of more implicit knowledge as a result of social interaction and global participation (Dwivedi, Williams, Mitra, Niranjan, & Weerakkody, 2011).

Web 2.0 allows users to both read and also share information on the internet. Presently, there are many popular Web 2.0 interactive applications such as Blog, Podcast, Mashup, Tag, Rss/Atom, Wiki, P2P, Moblog, Adsense and other similar platforms (Rajiv & Lal, 2011).

Methodology

Action research is used as a research method. Stephen Corey (1953) defined action research "as the process through which practitioners study the problems associated with teaching, evaluate it and take possible actions to improve teaching practices." For this particular research, Individual Action Research type was

adopted followed by the spiral model proposed by Kemmis and McTaggart (1988) as shown in Figure 3. Two action cycles were processed with specific purposes.

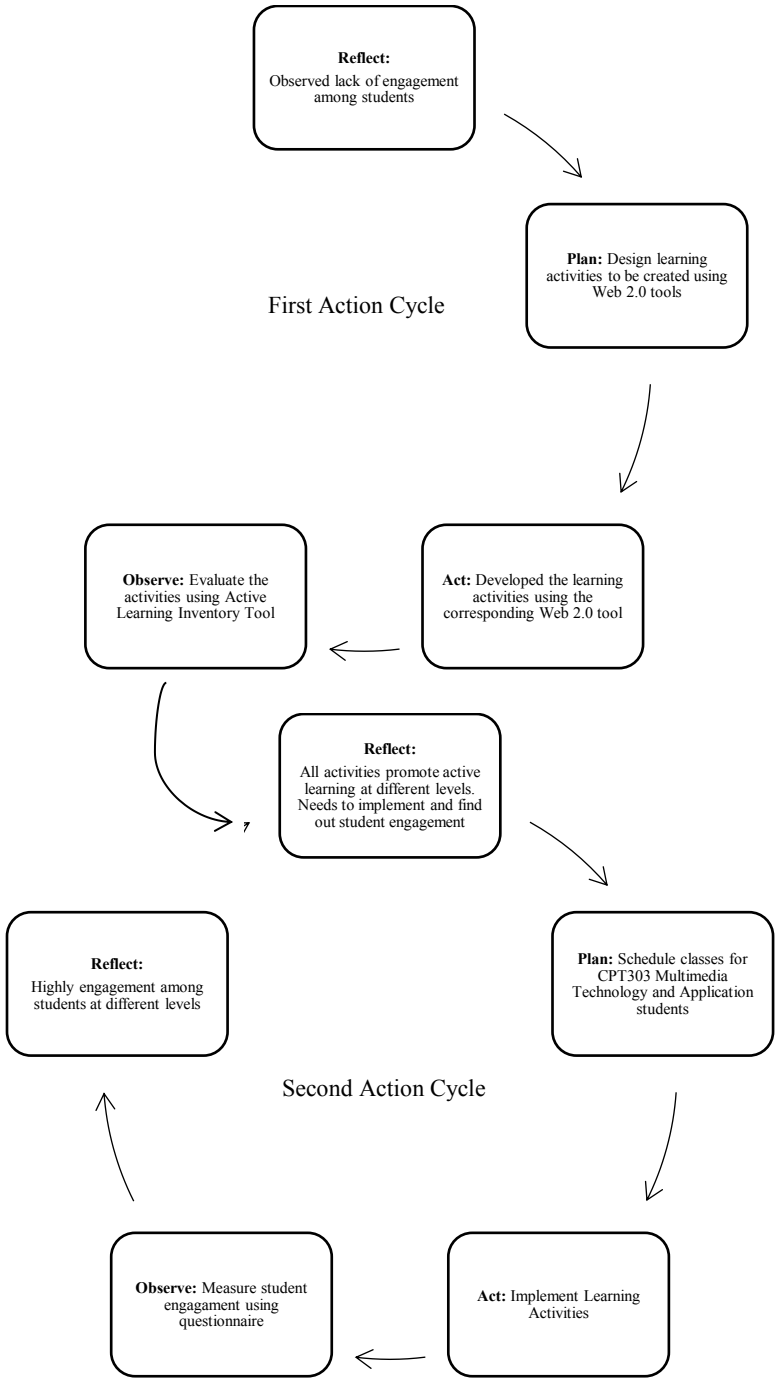

Figure 3 The Two Cycles of the Action Research

First Action Cycle

The main objective of the first action cycle was to design active learning activities (LA) using web 2.0 tools and to evaluate these activities on the levels of active learning they promote. The cycle followed the following phases:

- **Reflect (identification of the problem):** The researcher experienced lack of interest and motivation among students during class with passive mode of delivery. Current learners are considered active learners and teaching strategies needs to be changed from passive modes in order to increase their engagement. By adopting student-centred pedagogies several changes to the teaching strategies were brought in to make them active learners in the class through different learning activities (like group works, case study analysis and discussions). Even though several active learning tasks were incorporated, lack of active participation among IT students was observed. It seems that IT students were hesitant in writing in paper using pen and pencils. Hence, another solution needs to be looked into.

- **Plan:** Through literature it was identified that learning needs to be driven by technology for 21st century learners. Hence, it was decided to incorporate technology to create learning activities that could promote active learning. Web 2.0 tools were identified as a medium that could be used to create these activities. Therefore, it was planned to design learning activities using different web 2.0 tools and evaluate those using tools to ensure that the activities are directed to active learning.

- **Act:** Several activities were created using web 2.0 tools for one of the modules – CPT303: Multimedia Technology and Applications as illustrated in Table 1.

- **Observe (Findings):** The learning activities created were evaluated using Active-Learning Inventory Tool. Evaluation was carried out by the researcher himself and two other experts in instructional designing. The findings are discussed in the next section.

- **Reflect:** After the evaluation of the four learning activities, evaluators agree that each learning activity promotes active learning with combination of low complexity, medium complexity and high complexity levels. There is a need to ensure that these activities will engage students within

the classroom; hence, levels of student engagement need to be studied, which will be the main objective of the second cycle.

Table 1 Details of the designed Learning Activities (LA) using Web 2.0 tools

LA	Topic	Learning Outcome(s)	Learning Activity	Tool
LA1	Introduction to Multimedia	• Using own words, learner should be able to clearly define the term multimedia • In writing or orally, learner should be able to name all the five elements of multimedia • Given the uses of multimedia elements, learner should be able to identify the correct element. • When examples of multimedia projects are presented, learner should be able to classify it as either linear or non-linear with the reason. • In writing or orally, learner should be able to explain the applications of multimedia in different fields with examples	Students watch video: Chapter 1: Introduction to Multimedia While watching, students will be prompted with questions on their screens at different intervals. Students cannot skip the question without answering and if they do not know the answer, then they have the option to watch the content up to the question again. Video will continue only if the question is answered. For MCQ, questions immediate feedback will be provided and for open-ended questions, feedback will be provided once they complete the task. Teacher can monitor the progress, number of times a portion of the video is watched and so on. After the completion of task, answers will be discussed in the class.	Eduzzle
LA2	Images: vector graphics & bitmap graphics	• By collaboratively working with peers, learner should be able to prepare a presentation explaining all the features that differentiates vector from bitmap	Students are shared with a Google slide with some points that needs to be included based on Vector and Bitmap Images. They will be asked to complete the slides and present it to class. Students will be given option to decide on how they will	Google Slides

			proceed with it (division of work).	
LA3	Colours	Working in pairs and with supported resources, learner should be able to • Explain about the two colour models; RGB and CMYK • Describe at least three different colour harmony schemes • Explain the best practices in selecting background and foreground colour for a multimedia design • Explain the complete steps in calculating the size of a bitmap image	Students will be paired and for each pair a key point about colours will be assigned. Each pair needs to find information/content that explain the key points and also needs to provide evidence (websites, videos, articles) to support their content. All teams can rate others work based on their understandings and comment. At the end, there will be a discussion on the points.	Padlet
LA4	Principles of Visual Design	• Given a sample multimedia design and collaboratively working in teams, learner should be able to critically analyse the application of principles of visual design in the design	Class will be divided in two groups. Each group will be presented with a website design. They need to highlight and comment on the use of design principles and suggest how it can be improved. Once each group finishes, it will be exchanged among groups to review whether they have identified it correctly or there are any further issues or points that needs to be highlighted!	Concept -board

Second Action Cycle

The purpose of the second cycle was to measure the levels of student engagement when the developed learning activities were implemented within the classroom. The cycle followed the following phases:

- **Plan:** Third year students from the course Bachelor of information Technology who are completing the subject; Multimedia Technology and Applications (CPT303) were scheduled to be taught using the LA created during their classes.

- **Act:** As a lecturer, the researcher facilitated the lessons of the topic by using the LAs and allowed students to experience the LA implementation within the classroom.

- **Observe (Findings):** After implementing all of the four LAs, a questionnaire was administered online among the students. The questionnaire was developed based on the factors that measure student engagement based on the four dimensions. Students were asked to rate how well the presented behaviours, thoughts, and feelings describe to them during class. Then the results were analysed for further conclusion as detailed in the next section.

- **Reflect:** Results suggest that they were engaged within the four dimensions – with performance as the highest level of engagement.

Results

Evaluation of Learning Activities During First Action Cycle

In order to ensure that the designed activities using Web 2.0 tools promotes active learning, these activities were evaluated by a researcher and two other instructional designers, using the validated tool developed based on the published literature; Amburgh, Devlin, Kirwin and Qualters (2007). Experts in the field of educational research validated the Active-Learning Inventory Tool and its reliability was established by trained faculty members who used and evaluated it.

The tool presents different activities that promote active learning at different levels. Each learning activity was compared against the tool to identify the number of active learning tasks (episodes) within them and their corresponding level. An average of two active learning episodes for LA1, six episodes for LA2, ten episodes for LA3 and eleven episodes for LA4 were observed. Average percent agreement among the evaluators for the complexity level was calculated as illustrated in Figure 4.

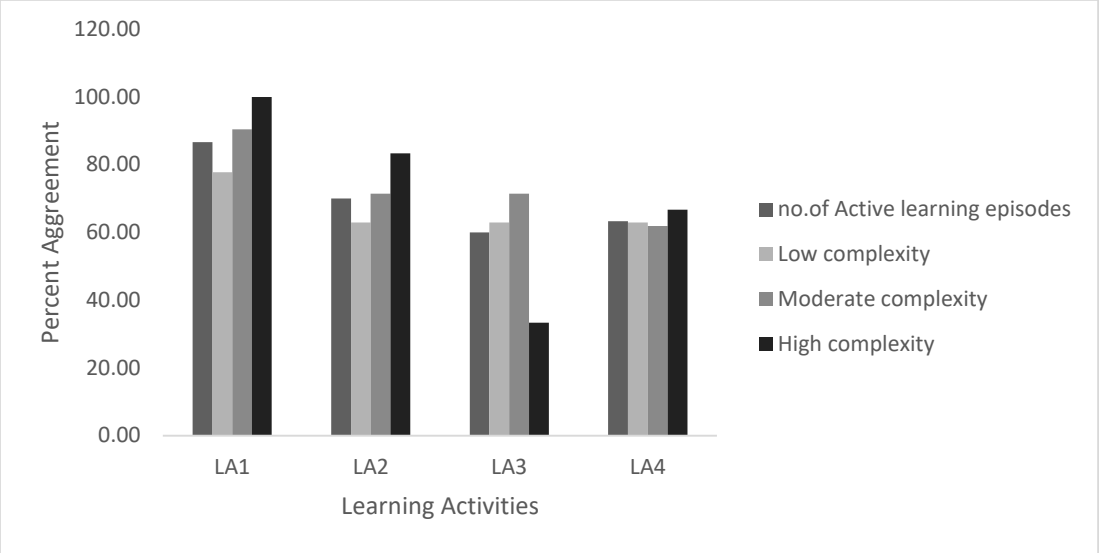

Figure 4 Percent Agreement among Evaluators for each Activity

Three different levels of active learning were observed per learning activity. The percent agreement among the evaluators for individual activity was reasonable.

The percent agreement for the total number of active learning episodes in all LAs was 70%, the number of tasks with low complexity level observed was 67%, moderate complexity level observed was 74% and high complexity level observed was 71% (Table 2).

Table 2 Average percent agreement for all the activities

	Average percent agreement
Total number of active learning episodes	70
Low complexity level	67
Moderate complexity level	74
High complexity level	71

Results showed general correspondence between the evaluators for the number of active learning episodes and their complexity levels.

Measure of Student Engagement During Second Action Cycle

Third year students from the course Bachelor of information Technology who were completing the subject Multimedia Technology and Applications (CPT303) were taught using the LAs. Students were then given an online questionnaire developed based on the factors identified after conducting an exploratory factor analysis by Handelsman, Briggs, Sullivan, and Towler's (2005) that measures student engagement. The four dimensions identified includes; skill, performance, participation and emotional. After the completion of all the LAs, students in the class were asked to rate how well the presented behaviours, thoughts, and feelings describe to them during the class (1. not at all characteristic of me, 2. not really characteristic of me, 3. moderately characteristic of me, 4. characteristic of me, 5. very characteristic of me).

Responses from all the 10 students were analysed by summarising the average percent agreement on the elements under each dimension based on two categories; not characteristics of me (ratings 1 and 2 combined) and characteristics of me (ratings 3, 4 and 5 combined). Results are presented in Figure 5.

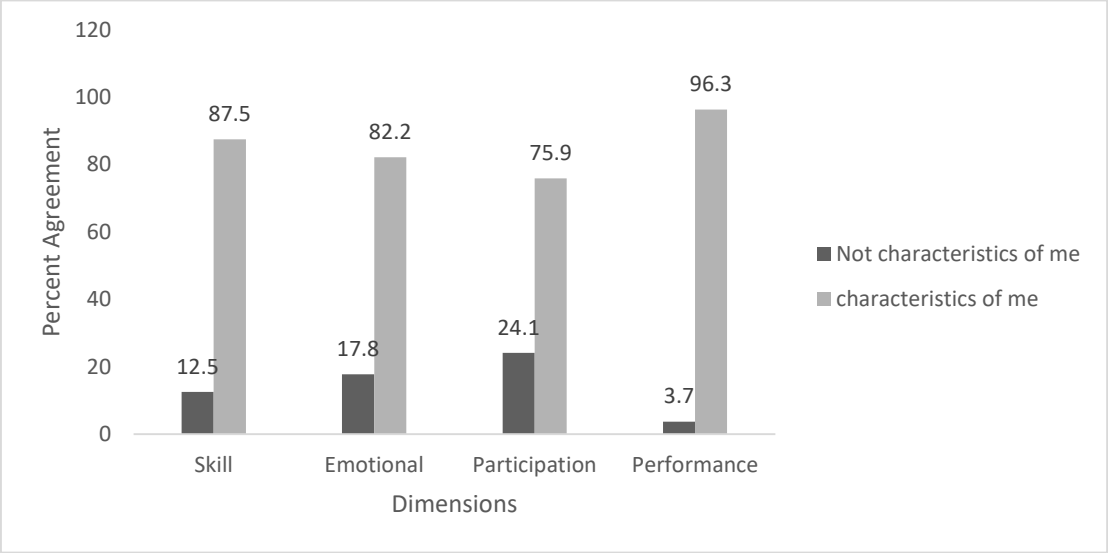

Figure 5 Percent Agreement among Students for each Dimension of Engagement

Students agree that they were highly engaged within the four dimensions; skill (87.5%), emotional (82.2%), participation (75.9%), performance (96.3%), with performance as the highest level of engagement.

Discussion and Conclusion

The research aims to find a solution to enhance student engagement in classroom which is considered as an important issue among educators and instructional researchers. Especially when catering for 21st century learners who are considered as active learners, new active learning strategies needs to be constantly looked into to help student engage in learning. Educators needs to create a learning environment to cater for the needs of learners in order learning to happen.

Researcher being a lecturer tried to create an active learning environment through learning activities created using Web 2.0 tools. After evaluation of these activities, there was rational agreement among the evaluators that they have included tasks which will promote active learning among students at different levels. Since the evaluation was carried out based on understandings among evaluators, noticeable differences were observed in the percent agreement. This could have improved if a moderation session among the evaluators were conducted prior to the evaluation. The average percent agreement on individual component was acceptable.

After the successful implementation of the learning activities, there were a high percentage of students agreeing that they were highly engaged during the lessons at all of the dimensions. Performance being the highest level with 96.3% tells us that students were confident that they will do well in learning tasks, assignments and tests which will help them to get a good grade. This supports partially the fact that in this era of technology, to make learners effective participants, pedagogical strategies need to be implemented in a technology enabled learning environment as the researcher previously failed to maintain student engagement through manual implementation of active learning. Since the implementation was only among IT students from a single class, the results may highly depend on characteristics of these students. So, to reconfirm, further research needs to be conducted for students from different disciplines.

Over all it can be concluded that Web 2.0 tools are helpful technological tools that can be used in classrooms to promote active learning among students in a technology enabled learning environment. Conducting the research as an action research, it helped the researcher to improve current teaching and learning practices, and found a solution to continue lessons by engaging students which will help to ensure that they are learning. Furthermore, the results will be a guide to other teachers to create learning activities using Web 2.0 tools that can be implemented within their classrooms by ensuring that the learners will be actively learning.

References

[1] Aguti, B., Walters, R., & Wills, G. (2014). Effective Use of ELearning Technologies to Promote Student-Centered Learning Paradigms within Higher Education Institutions. *International Journal for e-Learning Security (IJeLS)*, 4(3), 391-398.

[2] Amburgh, J. A. V., Devlin, J. W., Kirwin, J. L., & Qualters, D. M., (2007). A Tool for Measuring Active Learning in the Classroom. *American Journal of Pharmaceutical Education*, 1-8.

[3] Biggs, J., (2012). What the student does: teaching for enhanced learning, *Higher Education Research & Development* 31, 39–55.

[4] Corey, S. M. (1953). *Action research to improve school practices.* New York: Teachers College Press.

[5] Dale, E. (1969). *Audio - Visual Methods in Teaching* (3rd ed., p. 108). Holt, Rinehart & Winston, New York: Dryden Press.

[6] Dwivedi, Y., Williams, M., Mitra, A., Niranjan, S. & Weerakkody, V. (2011). Understanding Advances in Web Technologies: Evolution from Web 2.0 to Web 3.0.

[7] Dixson, M. D. (2015). Measuring Student Engagement in the Online Course: The Online Student Engagement Scale (OSE) . *Online Learning*, 1-15.

[8] Frick, H., Birt, J., & Waters, J. (2017). Enhancing student engagement in large management accounting lectures. *Accounting & Finance*, 1-28.

[9] Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring student engagement in technology-mediated learning: A review. *Computers & Education*, 36-53.

[10] Keengwe , J., Onchwari, G., & Agamba, J. (2014). Promoting effective e-learning practices through the constructivist pedagogy. *Educational Information Technology, 19*, 887-898.

[11] Kehrwald, B. (2008). *Understanding social presence in text-based online learning environments.* Distance Education, 29(1), 89–106.

[12] Kemmis, S. and McTaggart, R. (1988). *The Action Research Planner.* (Third Edition) Waurn Ponds: Deakin University Press. Lewin.

[13] Kirkwood, A., & Price, L. (2016). *Technology-Enabled Learning Implementation Handbook.* Canada: Commonwealth of Learning.

[14] Kivunja, C. (2015). Teaching Students to Learn and to Work Well with 21st Century Skills: Unpacking the Career and Life Skills Domain of the New Learning Paradigm. *International Journal of Higher Education*, 1-11.

[15] Miranda, P., Isaias, P., & Costa, C. J. (2014). E-Learning and Web Generations: Towards Web 3.0 and E-Learning 3.0. *International Conference on Education, Research and Innovation*, 92-103.

[16] Niemi, H. (2012). Relationships of Teachers' Professional Competences, Active Learning and Research Studies in Teacher Education in Finland. *Reflecting Education*, 8, 2344.

[17] Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education*, 93(3), 223–231

[18] Rajiv, & Lal, M. (2011). Web 3.0 in Education & Research. *BIJIT - BVICAM's International Journal of Information Technology*, 335-340.

[19] Ramsden, P., (2003). *Learning to Teach in Higher Education*, 2nd edn (RoutledgeFalmer, Oxon).

[20] Shaaruddin, J., & Mohamad, M. (2017). Identifying the Effectiveness of Active Learning Strategies and Benefits in Curriculum and Pedagogy Course for Undergraduate TESL Students. *Creative Education*, 2312-2324.

[21] Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in classroom: part of a larger motivational dynamic? *Journal of Educational Psychology*, 765-781.

[22] Virtanen, P., Niemi, H., & Nevgi, A. (2017). Active Learning and Self-Regulation Enhance Student Teachers' Professional Competences. *Australian Journal of Teacher Education*, 1-21.

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Ibrahim Adam is currently a lecturer at Centre for Educational Technology and Excellence, The Maldives National University. He received his Master of Multimedia (E-learning technologies) (2018) from Multimedia University, Malaysia and Bachelor of Information Technology (2012) from The Maldives National University, Maldives. For the past four years, he has been involved in providing quality education to the citizens of highly dispersed islands of Maldives through blended learning. He has been actively involved in designing, facilitating, monitoring and delivering courses in blended mode. In addition, he is an advocate for technology enabled learning and consistently look forward new ways of integrating technology to improve teaching and learning by maintaining quality through research. Moreover, he is highly engaged in training, supporting and promoting quality e-learning. Being a postgraduate award recipient, he is currently pursuing his PhD at Multimedia University, Malaysia, in the area of creative multimedia.

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