

# The Efficacy of Social Media Technologies in Academia: A Pedagogical Bliss or Digital Fad?

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## Abstract

Efficacy of a teaching strategy technically refers to the ability of that strategy to produce a desired or intended learning outcomes. To date, there is little information on the efficacy of social media technologies in academia and it is likely to be some time before their effectiveness is proven. It is therefore legitimate to ask the question, is their use in education a pedagogical bliss or merely a digital fad? To answer this question, this paper reports the current results of a study being conducted at a University in Australia to investigate the efficacy of using Google Circles Learning Communities (GCLC) social media technologies to facilitate teaching, learning, assessing and curriculum development for 2<sup>nd</sup> year, Bachelor of Education students in a pre-service teacher training award. The digital structures for the study were set up in the 1<sup>st</sup> trimester of 2015 with a small cohort of only 35 students. Those structures were then used in the 2<sup>nd</sup> trimester to conduct a formal research study involving a much larger cohort of 106 students. As the research is still ongoing, finalized results are yet to be obtained. The results reported here are drawn from the findings in the data gathered over the first five weeks of trimester 2 relating to the use of cutting-edge social media technologies to help students engage with and develop the Super 4Cs skills of the 21<sup>st</sup> century, namely Critical thinking, Collaboration, Creativity and Communication. The results indicate that while there is some anxiety among students about using social media technologies for academic work, there is a willingness to have a go. The data also provide evidence that students are keen to engage with the Super 4Cs of the 21<sup>st</sup> century, and that the use of social media technologies gives them an opportunity to do so. In particular the data provide evidence that the use of these technologies has potential to bridge gaps between internal and external students.

**Keywords:** The Super 4Cs of the 21<sup>st</sup> century, Critical thinking and problem solving, Collaboration, Creativity and innovation, Communication, Bridging the gap between internal and external students.

## 1. Literature on the Use of Social Media Technologies in the 21<sup>st</sup> Century

### 1.1 The Use of Digital Technologies and Social Media in Non-academic Contexts

Will Richardson (2010) whose advocacy for the use of Internet enabled technologies in teaching is internationally known says, “today’s schools are faced with a difficult dilemma that pits a student body that has grown up immersed in technology against a teaching faculty that is less agile with the tools of the trade” (p. 7). In particular, when it comes to using social media platforms such as MySpace, Facebook, Twitter, Google Circles, whereas these have become routine media for social conversation, particularly among young people outside school, they are yet to make strong inroads in the classroom. Richardson (2010) says that young children of primary schooling stages are utilizing social media platforms to engage in digitally driven social networks. Similarly, the National Education Technology Plan (NETP, 2005) which assessed the state of technology in USA schools asserted that students of all ages were much more conversant with computer technologies than their teachers. This was in synch with a nationwide survey conducted some ten years ago on K – 12 students in the USA (NDN, 2005) which found that 81% of students in Grades 6 – 12 had email accounts, used only for social conversations, even though nearly all of them (97%) believed that using technology was essential for their education. In *Digital Natives, Digital Immigrants*, Prensky (2001) suggested utilization of digital technologies had become a way of life in the daily experiences of young people that he

characterized as Digital Natives, having been born in the eighties and so they have grown up with technology as part of their strategies to live, study, socialize and thrive. However, Richardson (2010) asserted that “Whereas students are open to the ways of new technologies, schools by large are not” (p. 8).

### *1.2 The Use of Social Media Technologies in Academic Contexts*

Rheingold (2007) suggested that the kind of communication and collaborative interactions that students engage in when using social media technologies are not the kind of strategies being used to provide instruction or to facilitate learning in public school. This kind of experience led Richardson (2010) to conclude that “All this paints the picture of an educational system that is out of touch with the way its students learn” (p. 8). The world has transitioned from the 20<sup>th</sup> century Industrial Age to the 21<sup>st</sup> Information Age, but educational institutions have not. This has led leaders in the field such as Tapscott (1998) to lament that “the most widely feared prediction surrounding the digital revolution is that it will splinter society into a race of information haves and have-nots, knowers and know-nots, doers and do-nots – a digital divide” (p. 255). I suspect that this digital divide will only widen if educational institutions do not recognize the power of social media technologies to be instruments of effective teaching, learning, assessment and curriculum in academic contexts.

### *1.3 The Case for the Use of Social Media Technologies to Develop the Super 4Cs Skills Among Learners*

#### *1.3.1 The Concept of the Super 4Cs Skills for 21<sup>st</sup> Century Learning and Work*

What are referred to as the Super 4Cs skills of the 21<sup>st</sup> century are the skills of Critical thinking and problem solving, Collaboration, Creativity and innovation, and Communication. These skills were identified by the Partnership for 21<sup>st</sup> Century Skills (P21, 2015) as the super skills that students need in order to be successful at school and to find gainful employment on their graduation. Several articles have been published to explain what the Partnership for 21<sup>st</sup> Century Skills is (see for example, Kivunja, 2015a; 2015b; 2014a; 2014b). Essentially, it is an organization that was formed in Washington, DC, in 2002, to look at the extent to which graduating students had been equipped with the skills to find gainful employment in the Digital Economy. The Partnership argued strongly, that education programs which skilled students in the traditional 3Rs and core skills without embedding technology in curriculum were failing American children. In particular, the Partnership noted that there was a gap between the knowledge and skills required in the workplace of the 21<sup>st</sup> century and the skills American students were graduating with. Their mission was to identify educational strategies and curricula that could be followed in schools and institutions of higher learning to ensure that on graduation, American students would have the skills that were in demand in the 21<sup>st</sup> Digital Economy. The Partnership zeroed in on these 4Cs and categorically stated that they were the “shorthand for all the skills needed for success in college, career and life” (P21, 2015, p. 2).

Critical thinking basically refers to a person’s ability to engage in higher-order thinking processes which involve skillful conceptualization, applying, analyzing, and evaluating information (Mulnix, 2010). The Partnership identified it as a super skill because it enables people to engage in deep thinking and to solve problems, including unfamiliar problems. Communication skills are about sharing ideas whether this is through oral means, written media, effective listening, or digital media (Muijs & Reynolds, 2011) and they have become even more important in the 21<sup>st</sup> century because of the aggressive penetration of media and digital technologies into every day conversations and interactions. These skills are essential in all walks and works of life. Collaboration skills define the skills needed for people to work with others cooperatively, in groups or teams (Handsley, 2011). Creativity and innovation refers to the discovery of new ideas or new ways of using ideas, and so it involves an individual’s fund of knowledge, their ability to think creatively as well as the passion that motivates them on their way to the discovery of new ideas (Adams, 2006).

#### *1.3.2 Why Social Media Technologies Can Facilitate Learning and Teaching the Super 4Cs*

Dhiraj (2013) defines social media as “the many relatively inexpensive and widely accessible electronic tools that enable anyone to publish and access information, collaborate on a common effort, or build relationships” (p. 7). I bring up this definition here because it helps to see why social media could be good tools to use in teaching the Super 4Cs. Because they are relatively inexpensive, students can easily access them without significant financial costs, or virtually at no or very low cost to them or the recipients of their messages. Because they are easily accessible, they can very easily be manipulated to allow students to create their own content of ideas, data, images or information. Because they enable anyone to publish, students can easily use them to share or exchange the products they create using the Internet. Additionally, social media are very user friendly and can easily be accessed using Smartphones, iPads or some other relatively inexpensive mobile eTablets that can be connected to the Internet to create highly interactive platforms. These interactive platforms can enable students to share, co-create content, discuss learning

and assessment activities, and modify content generated by their peers. Thus, they appear to be excellent platforms for creativity, collaboration, communication and critical thinking, thus addressing the Super 4Cs.

## 2. Theoretical Framework for This Study

As the use of social media technologies in pedagogy is a new approach to teaching, it is important for us who are pioneering in this approach to demonstrate that their use is supported by foundational theories of learning. In this section, I highlight six examples of such theoretical constructs.

### 2.1 Social Constructivist Theory

One of the theoretical frameworks that has become the bedrock of modern teaching is Levy Semyonovich Vygotsky's (1929) social constructivist theory of learning. This framework emerged from cognitivist theorists' understanding that learning is a social experience rather than an individual one. They argued that the mind comprehends knowledge through a process of active construction rather than acquisition. This led Vygotsky to conceptualize:

the developmental theory of social constructivism, in which he proposed that children's cognitive development is influenced most by interaction with people, especially parents, other children, teachers and mentors in the child's social environment. He argued that it is the collaborative interactions between a learner and members of their immediate society that enable the learner to make meaning of their world in their cultural setting. (Kivunja, 2015c, p. 14)

In his later work, Vygotsky (1978) argued that, "The most significant moment in the course of intellectual development, which gives birth to the purely human forms of practical and abstract intelligence, occurs when speech and practical activity converge" (p. 24). The understanding of these propositions lends support to instructional strategies which give learners opportunities to learn through interactions and conversations with others, particularly including the use of language in a practical manner. Social media which are now part of the everyday experiences and conversations of our students appear to fit well into these postulates of constructivist theory.

### 2.2 Participatory Learning Theory

What I characterize here as participatory learning theory is theory that posits that children learn best if given opportunity to actively participate in the learning processes. A very good example of these theories is the 5E instructional model which was developed by a biological scientist Rodger W. Bybee (Bybee et al., 2006) in collaboration with six science colleagues at Colorado Springs Biological Science Curriculum Study Educational Centre. Bybee and his team postulated that to maximize students' active learning and construction of knowledge, they should be given opportunities to be involved in five key processes or phases of active learning. They identified the five phases as giving students the opportunity to engage, explore, explain, elaborate, and evaluate. This model was applied and made very popular in pedagogy by Jerome Bruner (1966) and is often referred to in pedagogy as Bruner's 5E Instructional model. Structures which work with Peer Learning Networks, which are the basis for GCLC social media, in which students work together to engage in learning activities, appear to create opportunities for the maximization of these 5Es.

### 2.3 Critical Thinking and Problem Solving Theory

A simple but very effective model for teaching critical thinking and problem solving is the theoretical framework developed by Edward de Bono (1956). Popularly known as De Bono's Six Thinking Hats model, the framework postulates that when we attempt critical thinking and problem solving, "we face three fundamental problems: emotions, helplessness and confusion" (De Bono (1992, p. 8). De Bono then designed six differently colored Thinking Hats as metaphors to represent six different cognitive approaches to understanding and solving whatever problem is encountered. The six hats are colored Red, White, Yellow, Black, Green and Blue, with each hat representing a different logical and philosophical approach to critical thinking and problem solving. The Red Hat represents an approach to problem solving in which learners express their emotions of likes and dislikes. White Hat thinking involves searching for the necessary information to solve a problem. Yellow Hat thinking approaches problem solving from an optimistic perspective. Black Hat thinking investigates the problem critically and with caution. Green Hat thinking approaches the problem creatively, looking for new ways to solve it. Blue Hat thinking approaches the problem from the visionary, big picture approach (De Bono, 1992). Thus, wearing a different Thinking Hat as learners approach a problem encourages them to approach the problem from a different perspective, with each perspective represented by its own colored metaphorical thinking hat, thus utilizing emotions correctly, identifying clear steps that we can take so we overcome the helplessness, and do one thinking at a time an avoid fundamental problems of mixed emotions, helplessness and confusion. In the Google Circle Learning Communities students have opportunities to approach problem solving in their own way and in as many different ways as they can think of. These digital structures

that give students the opportunity to think critically and to attempt to solve problems in their own way and with no one student having the monopoly of what is right to post in the GCLC at the exclusion of others' contributions, reflecting application of De Bono's model.

#### *2.4 Cognitive Processing Theory*

One of the most widely used theoretical frameworks of cognitive processing is that developed by a team of cognitive psychologists at the University of Chicago led by American educational psychologist Benjamin Samuel Bloom (1913–99). First published in 1956 as Bloom's (1956) *Cognitive Taxonomy of Educational Objectives*, the model, in its revised version, (Anderson et al. 2001), proposed six cognitive levels of hierarchical complexity, ranging from remembering, understanding, and applying at the lower cognitive levels, to analyzing, evaluating and creating at the higher cognitive levels. The model proposed that by setting children tasks which draw on the different cognitive processing levels, we increase their chances of engaging in deep learning at higher-order cognitive levels. Such tasks are by nature open-ended type of tasks with no pre-determined answers. They challenge learners to think outside the square and to contribute their own solutions to a problem or ideas to understanding a concept. The open-ended nature of the posts made into a GCLC by students and the lecturer lends itself to the kind of higher-order, cognitive processing envisaged in Bloom's theoretical framework.

#### *2.5 Multiple Intelligences Theory*

World-renowned American development psychologist Howard Gardner (1999) advanced a theory which posits that every individual has many, discrete intellectual capacities called multiple intelligences. In more recent writing Gardner admonishes:

since human beings have their own unique configurations of intelligences, we should take that into consideration when teaching, mentoring or nurturing. As much as possible, we should teach individuals in ways they can learn and we should assess them in a way that allows them to show what they have understood and to apply their knowledge and skills in unfamiliar contexts. (Gardner, 2013, p. 3)

This admonition aligns well with Crockett, Jukes, and Churches (2012) who in advocating teaching:

*21<sup>st</sup>-Century Fluencies for the Digital Age* [say] It is no longer enough that we educate only to the standards of the traditional literacies. If students are to survive, let alone thrive in the 21<sup>st</sup> century culture of technology-driven automation ... To be competent and capable in the 21<sup>st</sup> century requires completely different set of skills". (p. i)

These words of wisdom from these leaders in the field suggest that we can no longer continue to teach all learners as though they all learn in the same way, and we can no longer teach them just the traditional skills. This advice presents all of us with a challenge to look for new ways that can give all students of all different abilities and learning styles, a chance to succeed in the Digital Age classroom. New ways of teaching including the use of social media technologies may be one of the paths that will help learners to develop 21<sup>st</sup> century fluencies, such as information fluency, collaboration fluency, creativity fluency and media fluency; all of which are essential for success in the 21<sup>st</sup> century.

#### *2.6 Connectivist Learning Theory*

One of the most recent additions to the theoretical frameworks that inform our pedagogical practice has come from an increasing understanding that computer-mediated tools and digital technologies can assist in the construction of foundational knowledge in socially oriented contexts. This understanding has given rise to what is referred to as the connectivist theory of learning. Well articulated by Siemens and Downes (Siemens, 2004) the connectivist theory proposes that digital technologies, such as social media technologies, are powerful drivers of social construction of knowledge and that this knowledge construction occurs best when learners are digitally connected. This theory is supported by several leaders in this field including Don Tapscott (2009), Marc Prensky (2001), and Frank Kelly, Ted McCain and Ian Jukes (2009). Connectivist theory encourages us to look at social media technologies, not simply as tools for social conversations outside academia, but also as instructional tools that we can offer our students to facilitate their learning through digitally connected social structures, such as the Google Circle Learning Communities investigated in the study reported here.

### **3. Methodology**

#### *3.1 Case Study Research Design*

The review of literature on the use of social media discussed above suggests that an increased understanding of the efficacy of social media in pedagogy would benefit from an investigation of how students engaged in a Unit in which they had opportunity to interact with each other actually utilized social media technologies in their collaboration,

communication, critical thinking, problem solving and creativity. Distinguished educational researchers such as Denzin and Lincoln (2000), Hammersley (1992), Lincoln and Guba (1985), Merriam (2001), Schwandt (1997) as well as Scott and Usher (1996) recommend that a research methodology that is best suited to the study of subjects in their natural contexts, is case study inquiry. For example, in an explanation of what a case study in social research methodology is and what it involves Hammersley (1992) says that “case study involves the investigation of a relatively small number of naturally occurring (rather than researcher-created) cases” (p. 183). Likewise, Merriam (2001) defines case studies as:

forms of descriptive, non-experimental research, undertaken when description and explanation are sought, when it is not possible or feasible to manipulate the potential causes of behaviour, and when variables are not easily identified or are too embedded in the phenomenon to be extracted for study, and the aim is to examine contemporary events or phenomena when the relevant behaviours cannot be manipulated. (pp. 6 – 7)

Accordingly this research was designed as an interpretive case study of how students enrolled in Units EDLT217 and EDLT219 (Planning and Assessing for Active Learning) utilized social media technologies in their learning and assessment. The aim was to gain sufficient detail on how students used these technologies in their learning and assessment so as to and provide a “rich, thick description” (Lincoln and Guba, 1985, p. 41 and Merriam, 2001, p. 29) of the efficacy of social media technologies used. The case study used both qualitative and quantitative research instruments in a complementary manner, as recommended by Merriam (2001), Hammersley (1998), Miles and Huberman (1994) as well as Glaser and Strauss (1999), so as to be able to triangulate the data “and enhance the validity and reliability of the study” (Merriam, 2001, p. 69).

### 3.2. *Research Questions*

The study from which this paper is drawn was designed to investigate the following nine questions:

- 1) How does the use of Google Circles Learning Communities social media technologies in teaching impact on students’ participation rates in the learning activities?
- 2) What evidence is there of students engaging in critical thinking and problems solving, collaboration, creativity and innovation, and communication? (i.e. the Super 4Cs of the 21<sup>st</sup> century).
- 3) What evidence, if any, is there of peer mentoring and support for each other among learners participating in a Google Circle Learning Community (GCLC)?
- 4) Which learning styles do students that learn using GCLCs demonstrate?
- 5) Is there evidence that when students are engaged in a Web-based, asynchronous learning context, using social media they assume greater control of their learning?
- 6) To what extent are students engaged in the learning and assessment activities?
- 7) What is the quality of learning discourse evidenced by the posts in the GCLC streams and how do these compare with the standard Moodle forums?
- 8) What do participating students say about the impact of using GCLC on their learning, collaboration, critical thinking, communication, and creativity?
- 9) What do students say about the overall impact of using these social media technologies on their learning and preparation of assessment tasks?

The results reported in this paper relate only to the first two questions; first, because it would be impossible to cover the scope of the nine questions in one paper; and second, because the study is still a work in progress.

### 3.3 *Participants, Sample Sizes and Sampling Procedure*

Potential participants in the study were all the students that were enrolled in Unit EDLT 217 and EDLT219 of the 2<sup>nd</sup> year Bachelor of Education degree for pre-service teacher education. The students were in two cohorts, a small internal cohort (n = 25) and a larger external cohort (n = 81) making a total population of 106 potential participants.

Students in the internal cohort (n = 25) randomly assigned themselves to Peer Learning Networks (PLN) of 5 members each; and these were the core structures for their face-to-face workshop learning activities. External students were automatically assigned to PLNs of n = 10, leading to 7 PLNs with n = 10 and one PLN with n = 11, following a purposive sampling methodology (Burns, 2000). Purposively designed, these PLNs were the starting core groups for all the learning interactions that were to take place in the Moodle Learning Management System.

Participation in the PLNs was mandated. Using the PLNs as the starting point, students were invited into one virtual learning classroom set up on the web (external to Moodle) as a Google Circle Learning Community (GCLC). Participation in the GCLC activities was voluntary. Consequently, the GCLC was designed as a convenience sample (Cooksey & McDonald, 2011) and this ended up with a total  $n = 82$  as of week 5 of trimester 2. It is worthy pointing this out, because external students who might not be on teaching practice in the four weeks following Lecture Week 5, tend to engage in the GCLC during that time. This increases the participation rate. The  $n = 82$  comprised 15 internal students and 67 external students. This means that 60% of the internal cohort and 83% of the external cohorts, volunteered to participate in the study, by week 5 of trimester 2. Purposively designed like this, the sample of  $n = 82$  created opportunity for internal and external students to learn together in one virtual classroom of the 21<sup>st</sup> century, using cutting-edge social media technologies.

### *3.4 Ethical Considerations*

As the study involved teacher-student relationships, special permission was sought from the Human Research and Ethics Committee of the university where this study was conducted. Permission was granted subject to certain conditions all of which were met. For example, all students were fully informed of the nature and purpose of the study, they were given assurance that their identities would not be revealed, that their participation was voluntary and that if they chose not to participate this would not in any way affect their grades. Their consent was explicitly sought.

## **4. Data Gathering and Analysis**

### *4.1 Data Gathering*

The data consisted of students' and the lecturer's postings into the GCLC stream. Students posted the data using their own Smartphones, iPads, eTablets and Laptops. Students' postings included their personal comments, comments that they had made in response to their peers' posts and to the lecturer's instructions and feedback. They also consisted of resources that the students discovered by themselves or created on their own (e.g. photographs and graphic organisers they designed). Some were imported from the resources suggested in their prescribed textbook on the pedagogical topics that were being learned each week.

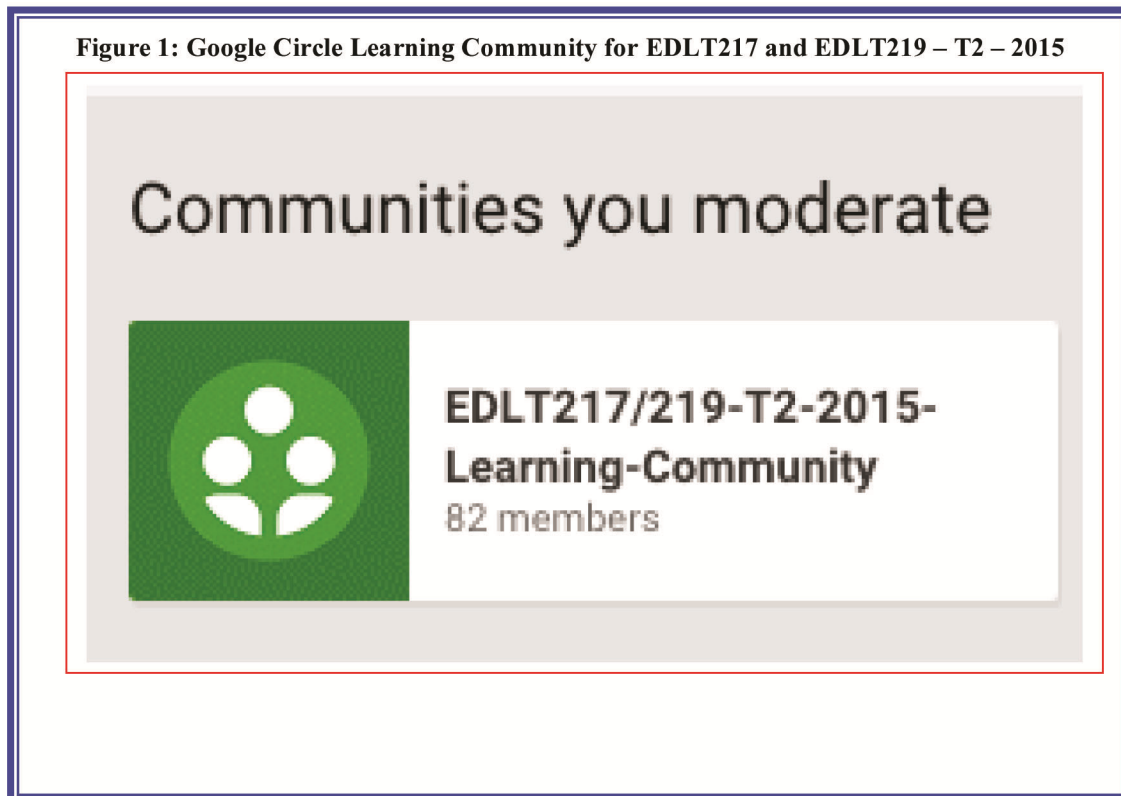
### *4.2 Data Analysis*

The primary purpose of the data analysis was to answer the two research questions stated above. The findings are presented in the following two subsections, respectively. Students; surnames or identifying images that are not avatars are hidden for privacy reasons as specified in the Ethics Certificate that authorized the study.

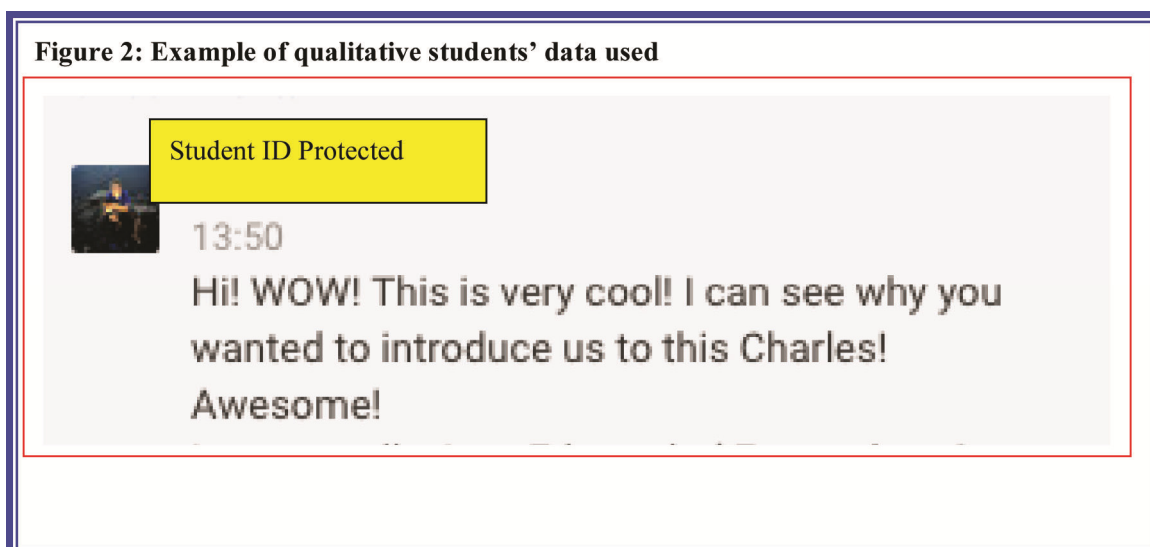
## **5. The Findings**

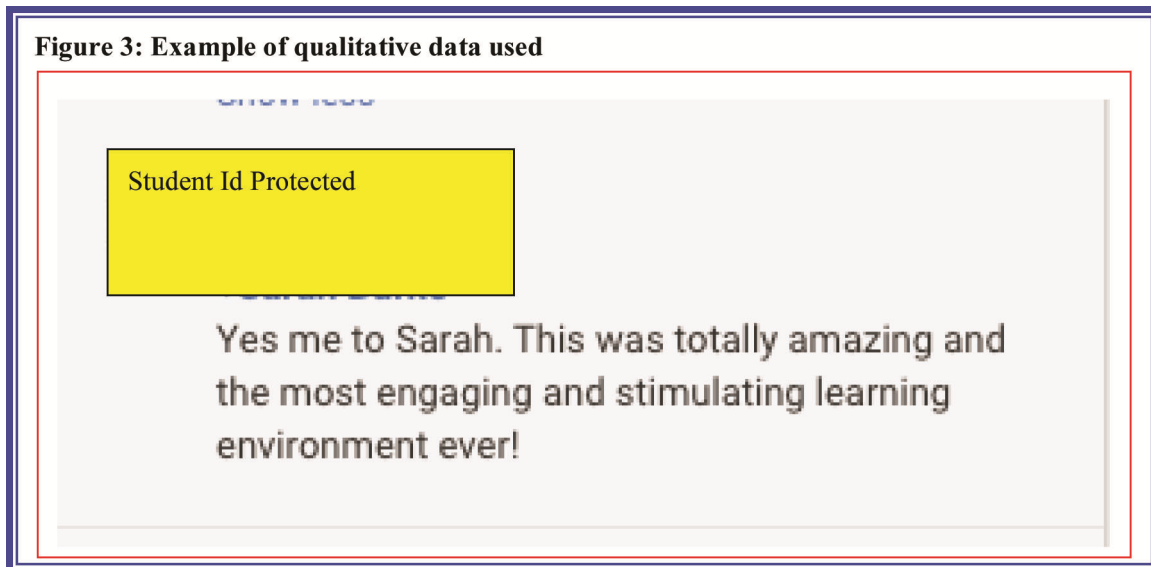
### *5.1 How Does the Use of Google Circles Learning Communities Social Media Technologies in Teaching Impact on Students' Participation Rates in the Learning Activities?*

The virtual classroom in which the students met asynchronously and interacted with each other is illustrated in Figure 1, which represents the GCLC used by students who participated from both the internal ( $n = 15$ ) and external ( $n = 67$ ) cohorts. To answer the question restated here, firstly, a quantitative analysis was conducted to make comparisons between the number of students who participated in the discussions in these Units without using the GCLC social media technologies and those that participated when these social media technologies were introduced. The research found, that without the use of GCLC technologies, students held their discussions within each PLN. As stated earlier, in each PLN,  $n = 5$  for internal students and  $n = 10$  for external students. With the introduction of the social media technologies participation rates jumped from a maximum of 5 in each PLN of the internal students and from a maximum of 10 in each of the external cohorts PLNs (except one that had  $n = 11$ ) to a maximum of 82 as illustrated in Figure 1. These results represent an increase in participation rates of 1,640% for the internal cohorts (from 5 to 82 students) and 820% for the external cohort (from 10 to 82 students). These results suggest the existence of a very high multiplier effect that is associated with the introduction of social media technologies to get the students to study together. Moreover, this virtual classroom (the GCLC) helped to bridge the collaboration and communication gaps that normally exist between internal and external students. At the time of this research, there was no structure at this university which created opportunities for students enrolled in the internal cohort and those enrolled in the external cohort to learn together in one classroom. Thus, the use of the GCLC appears to represent a significant break through in trying to give the same quality of learning experiences to both our internal and external students.



Secondly, qualitative analysis was conducted to shed some light on why these exceptionally high participation rates had been experienced. The proxy for the reason or reasons were the subject matter contained in the posts in the GCLC stream. The data that highlighted the reasons included the following two illustrative examples. In the presentation of the data, students' IDs are removed for ethical reasons.



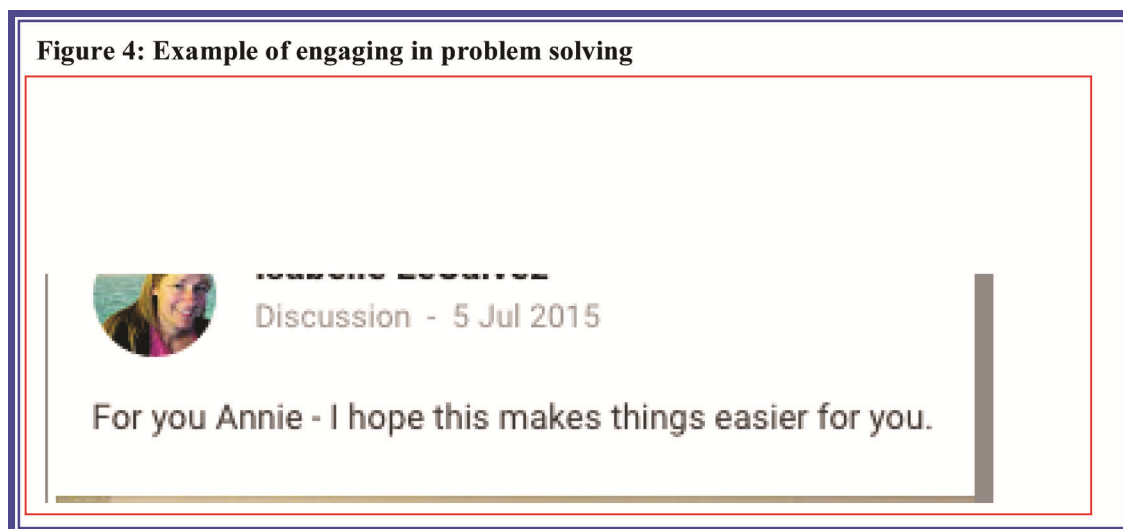


The data presented in both Figure 2 and Figure 3 suggest that students got engaged with the social media technologies because they found them interesting. The social media slang word “cool” used in the data illustrated in Figure 2 means awesome or great. That presented in Figure 3 is even more emphatic when it says that participating in the GCLC, “... was totally amazing and the most engaging and stimulating learning environment”. These superlatives help to explain the power of these social media technologies in getting students to participate in their learning activities. In *Why Don't Students Like School* Willingham (2009) tells us that “teachers should reconsider how they encourage their students to think, in order to maximize the likelihood that students will get the pleasurable rush that comes from successful thought” (p. 3). Use of these social media technologies appears to be a good example of how Willingham’s advice could be put to pedagogical practice with significant efficacy.

5.2 *What Evidence is There of Students’ Engaging in Critical Thinking and Problems Solving, Collaboration, Creativity and Innovation, and Communication? (i.e. the Super 4Cs of the 21<sup>st</sup> century).*

#### 5.2.1 Evidence of Critical thinking and problem solving skills

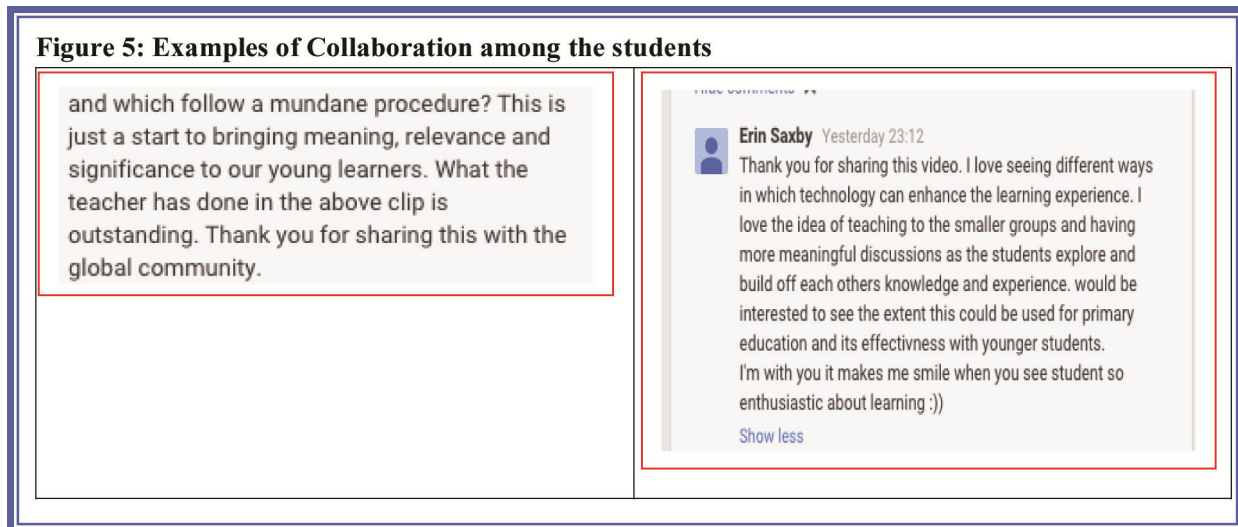
Data that contribute to our understanding of how students engaged in Critical thinking and problem solving were looked for in the qualitative data posted in the GCLC stream. The guiding question was, does the student’s post demonstrate some aspect of critical thinking or problem solving? The example illustrated in Figure 4 appears to demonstrate evidence of how a student was trying to solve a problem for another.





5.2.2 Evidence of Collaboration skills

The emphasis in collaboration was on students' demonstrated willingness to share information about their learning activities. The data in the GCLC stream contained many such examples of which two are illustrated in Figure 5.



5.2.3 Evidence of Creativity and innovation skills

The Creativity and innovation skill was represented in the data which showed that students had created a product and then shared it with the Learning Community. The best examples of this were graphic organizers that students had designed by themselves to demonstrate their understanding of specific critical thinking tools which they could use to teach primary stage children how to think critically. One of many good examples is illustrated in Figure 6.

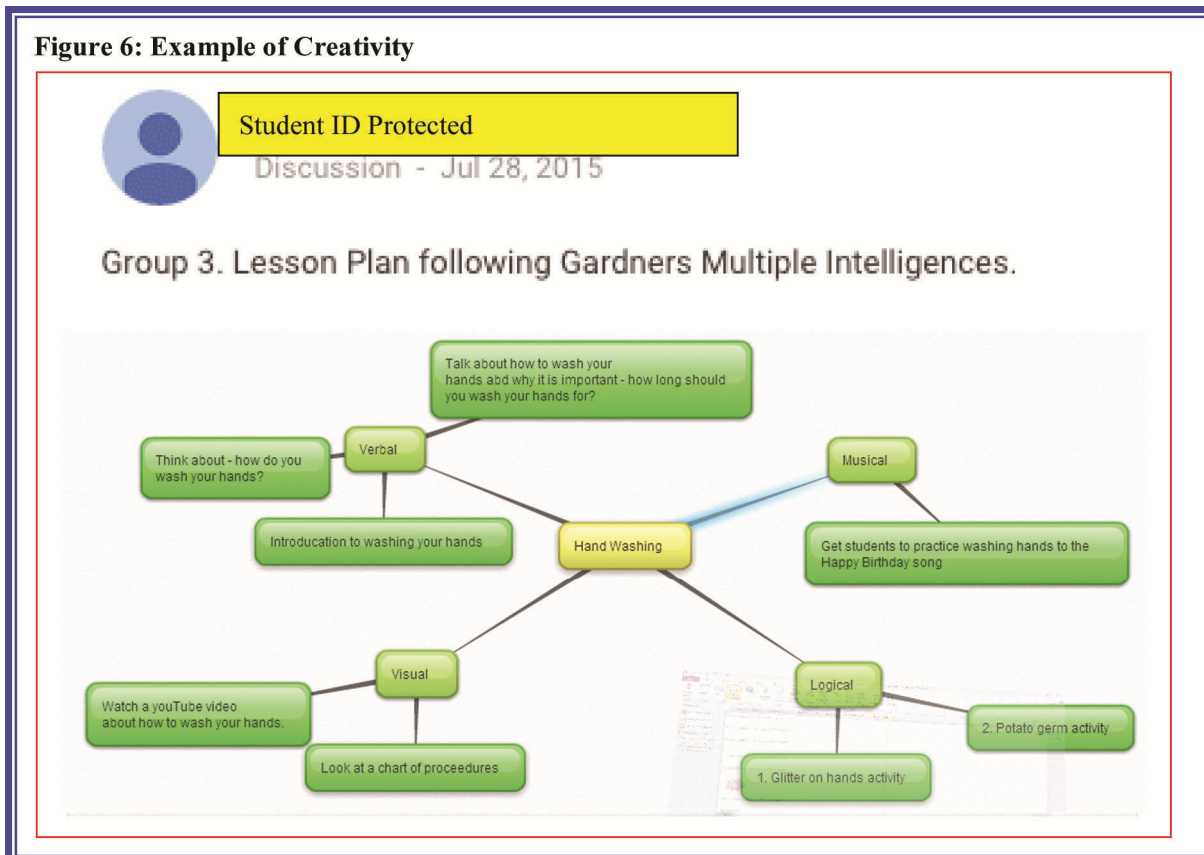
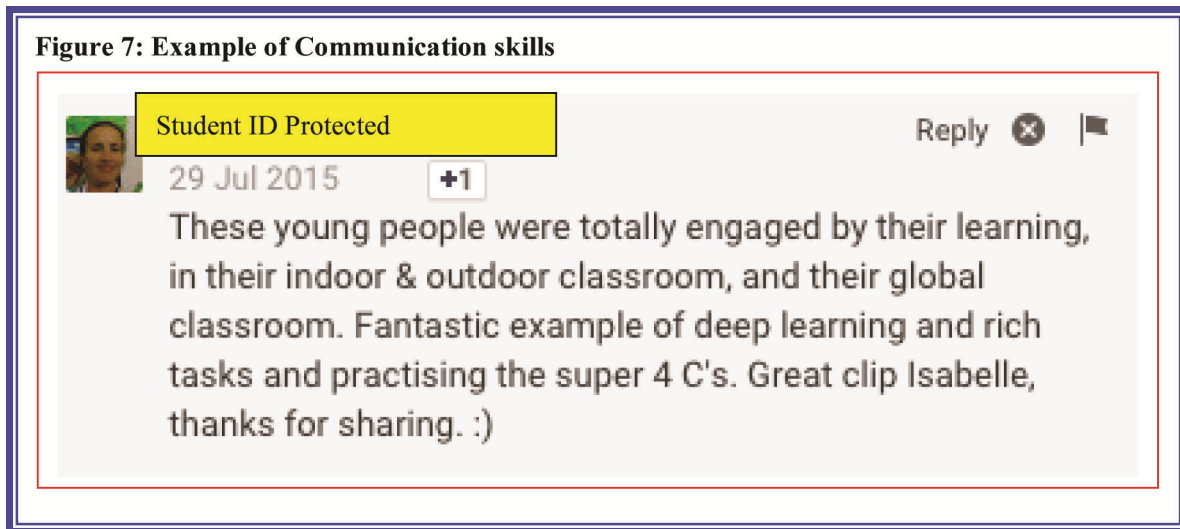


Figure 6 is a good example of the creativity demonstrated by a group of students (PLN-Group 3) that created a graphic organizer illustrating how each of Gardner's (1999) multiple intelligences could be taught in a primary classroom and then posted their finished product in the GCLC. The labeling of the multiple intelligences is too small to be read in Figure 6 but in the GCLC it was active and clicking on any of the multiple intelligence buttons would enlarge the graphic so that the text could easily be read.

#### 5.2.4 Evidence of Communication skills

Evidence of Communication was contained in any qualitative data that showed good communication skills. Essentially the data showed that a student had something important or helpful to his or her peers and shared it in a meaningful way in the GCLC. Figure 7 illustrates such an example.



## 6. Conclusions

Students postings in the GCLC stream represent a weblog which the students can share 24/7/365 not only with their peers but with the world. Thus, the use of these social media technologies gives the students the power to connect with others in ways they had not imagined were possible before they started using these technologies. What was particularly encouraging was the fact that the students joined the GCLC without instructional imperatives from me. They could have kept their conversations in the usual LMS, Moodle, but instead, they freely chose to participate in this new way of learning.

Of course, asking students to engage in GCLC in addition to what they do in Moodle is an extra load and demand on their time. It also means extra work for the teacher or lecturer. However, it looks like the benefits are worth the extra effort from both students and lecturer. This is no doubt a new way of teaching, learning, assessing and developing curriculum, but it is one that I believe has potential to catapult students, teachers and lecturers on to a new horizon of discovery and learning which will open up new frontiers of knowledge. But we need to acknowledge that this is new both to us as teachers and students. Students are aware of this and if they see their teacher put in the extra effort to teach them something new, most will respond positively. The data in Figure 2 are a good illustration of this.

The answer to the first research question was asserted very affirmatively. There is no doubt that the use of these selected social media technologies resulted into much higher participation rates as illustrated in Figure 1. As said earlier, what is particularly encouraging is that students voluntarily participated in the discussions taking place in the GCLC. It was not mandated. As well illustrated in Figure 2 and 3, they participated because they found the experience "cool, ..totally amazing and stimulating". I would argue that if we could get our students to recognize their learning experiences as cool, amazing or stimulating, we would be on our way to getting them interested and engaged in their learning activities, in a rather revolutionary way. Willingham's (2009) question cited earlier of *Why don't students like school?* would to some degree be answered.

Students of all learning stages, not only in the K – 12 levels but also right across all stages, need to be trained in the Super 4Cs skills of the current Digital Age. That's why these two teacher-training Units (EDLT217 and EDLT219) specifically seek to achieve these outcomes among the 2<sup>nd</sup> year teacher trainees enrolled in these Units, before they go out on professional practice. The results of this study show that the use of these social media technology created

opportunities for the students to engage in Critical thinking and problem solving, Collaboration, Creativity and innovation, as well as Communication; and that as a matter of fact students did engage in using these skills, in a rather enthusiastic way. Overall, the results of this study suggest that these social media technologies have potential to contribute to making pedagogy more participatory, interesting to students, engaging, and even “cool and amazing”. This, I propose, would suggest that the use of carefully selected and well designed social media technologies in pedagogy is not a mere digital fad but possibly pedagogical bliss.

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