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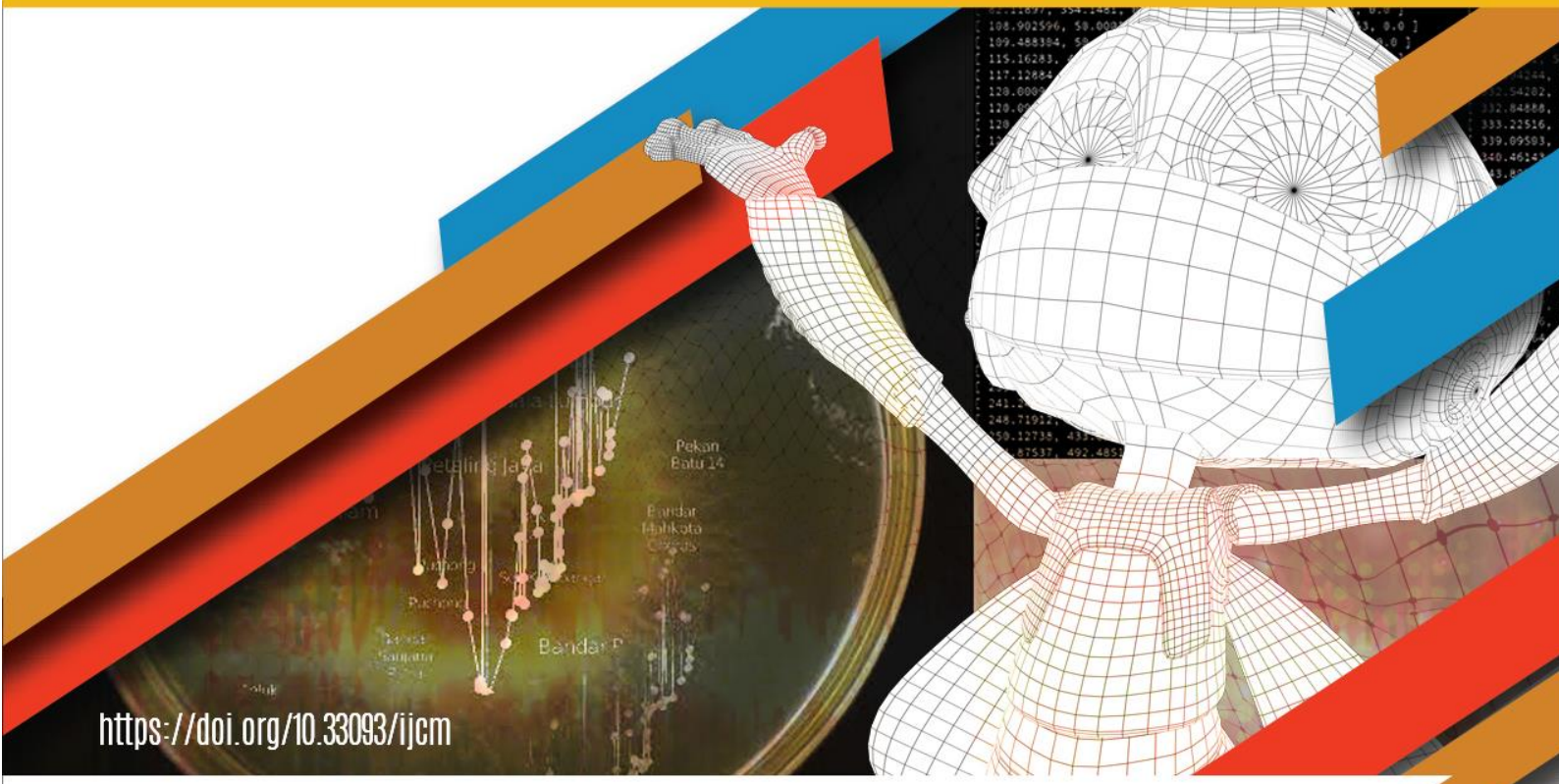

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Editorial Board

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

The New Roles of Teachers in 21st Century Learning

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Abstract

Education is important for a society's growth and development. A teacher must be able to effectively educate students and create interest in them. The main discussion aims to identify the new roles of teachers in the 21st century learning. This paper also discusses the impact of students' learning motivation towards their subjects. The problem some teachers face includes situation where students pay less attention to difficult subjects while having negative learning mindset. Lack of enthusiasm and rigidness from the teacher are also part of the problem. The new role of teachers is measured in three ways which are learning mindset, roles & qualities of teachers and Bloom's Taxonomy. An online survey was conducted among 30 lecturers using convenience sampling technique. The suggestions given are based on the S.M.A.R.T concept which comprises of structure of class, teachers as motivators, assessment conducted, teachers' role as consultants and blended learning tools used by teachers. This paper also discusses the use of Bloom's Taxonomy which will help teachers to have proper classroom management and preparation of a constructive lesson plan. The key finding of this paper is that the new roles of teachers in the 21st century learning should give impact to students based on the 4Cs.

Keywords Negative learning mindset; S.M.A.R.T concept; Bloom's Taxonomy; 4Cs

Introduction

The traditional roles of teachers are seen as a class leader, lecturer and information provider (Murchu, 2005). Teachers who adopt traditional roles refuse to change and strongly believes that their method is the best. These teachers who practice a one-teacher and one-classroom model will face with massive workload

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(Barrett & Arnett, 2018). The role of teachers in the 21st century is known as consultant, motivator and resource provider. Currently, teachers are changing their method of teaching to be more approachable for students' learning (Berge, 2000). Teachers act as key actors who form the learning environment that enhances and sustain students' motivation thus engaging students in learning (Hornstra, Mansfield, Veen, Peetsma & Volman, 2015).

Problems or Issues Faced in Teaching & Learning in Higher Education that Called for the Innovation

Mindset refers to students' belief about school and learning (Mindset Scholar Network, 2015). Past study also mentioned that, mindset can be an outcome of students' achievement (Zhang, Kuusisto & Tirri, 2017). Students with learning mindset are found to be able to execute challenging task and form the way they respond to challenges (Mindset Scholar Network, 2015). Problem arises when students have negative learning mindset when they believe that they are not good in certain subject in school (Mindset Scholar Network, 2015). With that, they do not want to take the initiative to find ways to improve their academic performance resulting in them giving up. They also have the "copy and paste" concepts where they think it is the fastest way to complete the task given by their teachers. Learning mindset gives impact to students whereby they understand the bigger meaning of the challenges they face and it is a way they translate their daily experiences (Mindset Scholar Network, 2015). With that, students have the perception that if they have obtained high coursework marks, there is no need for them to do comprehensive preparation for final examination as they want to just obtain a pass for the subject. Previous study mentioned that, students who have the believe that by failling to obtain good results in certain subject they will study lesser and conclude that they are not good at it (Mindset Scholar Network, 2015). They are not bothered about the grades that they will obtain or even their overall academic performance. This led students to have negative learning mindset while believing that they are not smart.

Literature Review

Negative Learning Mindset, New Roles of Teachers & Bloom's Taxonomy

Bloom's Taxonomy can be used to identify students' thinking and ways they convey their understanding (Heick,2019). Students with negative learning mindset are creative at times. They have this mindset due to the boredom they experience during challenging subject classes. Bloom's Taxonomy can be used by teachers to build solid foundation for learning (Flanagan, 2019). Based on Bloom's term '**create**', students need to use innovative or **creative** thinking (Heick,2019). Students will be encouraged to transmit from lower levels to higher levels when points are given to them for each level (Heick, 2019). This may change the negative

learning mindset of students. Blair, Tobman, Kremling and Morris mentioned that when students are challenged to do things that they think they can't do or don't want to do, they will be resistant. This will lead them having negative mindset.

The new role of teacher as a **controller** encourages students to participate in discussion and able to give explanation and clarification (Kudryshova, Gorbatova, Rybushkira & Iwanova, 2016). This refers to **understanding** in Bloom's Taxonomy whereby teachers explain task given to students. The structure of the class should be based on the 21st century design. A study mentioned that students learning at higher levels during group discussions support the concept of Bloom's Taxonomy (Athanassiou, McNett & Harvey, 2003). A teacher's role as a **moderator** creates conditions for students to analyse the knowledge that they have (Kudryshova et al., 2016). Teachers later observe students' activities and this is related to **analyse** in Bloom's Taxonomy. The role of teacher as a **facilitator** relates to **evaluate** in the concept of Bloom's Taxonomy whereby it simulates professional situations and encourage students to form alternative solutions. Teachers act as **leaders** when they observe students' behaviour and skills. The study done by Thanh (2018) stated that students in the 21st century have quick access to the knowledge store. This will enable them to **communicate** with people during evaluation process so that they can achieve their goals.

Negative Learning Mind-Set, New Roles of Teachers & S.M.A.R.T Concept

Heick mentioned that the **structure** of the class should include information rich environment, persevere connectivity and powerful media forms. Previous studies stated that teachers should use textbook as the second source to find information. Teachers should integrate technology in their classes so that students have more sources of information. Teachers should be **motivators** in students' learning by being enthusiastic and dedicated in their job. According to Thanh (2018), teachers must change their conventional way of thinking and influence students' learning style. He also stated that teachers must be responsible in encouraging student-centred learning concept in classrooms. One of the authors from Your Therapy Source (2018) mentioned that the reaction that we project to students towards their learning will bring impact to them. When a teacher respond "good job" or give any positive remarks to their students, students will feel motivated to do more and will change their negative learning mindset. **Assessment** conducted by teachers aim to test the knowledge about the subjects taught in class. Teachers can infuse Bloom's Taxonomy in their assessment which can be in the form of multiple choices, short answers and essays (Eber & Parker, 2007). The study also stated that it is essential to assess students based on rubrics whereby it can minimise the time spent on evaluating students. Previous study suggested that the assessment

should be constructed based on students' performance in order to determine their needs and achievement. The new **role** of teachers as consultant will help students to give better response in classes. Thanh (2018) mentioned that teachers should guide and help students to have an aim in learning. When students have an aim, they will not have negative learning mindset in learning. Previous studies mentioned that teachers should play an active role in preparing students for the 21st century workplace environment. In order to adapt to the 21st century learning, students must have access to digital technology so that they are exposed to blended learning **tools**. There are many teachers depending on technology to help student to understand concepts and enhance learning (Wedlock & Growe, 2017). They also suggested that learning will be at its best if students and teachers are learning together. This is possible when teachers provide explanation whenever a new learning tool is implemented during lessons.

Methodology

Negative Learning Mindset, New Roles of Teachers & 4Cs

This research paper also relates Bloom's Taxonomy and the 4Cs in the 21st century learning; creative, communication, critical thinking and collaborative. Based on the current study conducted, some group of students felt demotivated and reluctant to complete the task given to them because they think it does not benefit them and no marks were rewarded. This projects negative mindset as they only do the task when there are marks given. With the help of Bloom's Taxonomy's **create** and the use of digital technology (blended learning), students can access various ways to do their task on their own time by thinking and reading (Heick, 2019). This may possibly change the mindset of students as they have **creative** methods to learn their subjects. The term **evaluate** in Bloom's Taxonomy give students chance to evaluate their own progress and provide justification. This will definitely change the mindset of students as they feel that they can be independent learners and can help to improve the quality of learning. Based on past experiences, when the researcher was teaching Business Management subject, students were given questions on current issues to discuss and present. Question and answer sessions are highly recommended as it gives opportunity to students to **communicate** with their peers. They are required to work as a team (**collaborative**) and use **critical thinking** to understand and **analyse** a given situation. Some students faced difficulties in answering the questions as they are not determined to think critically. The role of teachers as controllers may change the mindset of non-business students who think that having business subject in their course is irrelevant to them. Students will be able to **understand** the concept of the subject taught when they are assessed by teachers. The group activities given to students have showed cooperation between them to achieve a common goal. Hence, this will brush away negative learning mindset of the students.

Survey Questionnaire

A Likert Scale questionnaire is used to find out what the target population think about the new roles of teachers in the 21st century learning. The lecturers in Multimedia University are regarded as the target population for this research. The sample size is 30 respondents from Cyberjaya and Melaka campus. The respondents are lecturers teaching all levels of programme (Foundation, Diploma, Bachelor and Postgraduate) which consist of Business and Management academic discipline. Convenience sampling was applied for this research.

The survey questionnaire consists of five parts and it was analysed based on the responses given by the respondents. Part A shows the respondent's demographic (4 items). Part B aims to know the feedback on students' learning mind-set (3 items) and observe student learning mind-set (4 items). Part C relates to the role of teachers (5 items) and qualities of teachers (6 items). Part D assesses their implementation of Bloom's Taxonomy (12 items). Part E relates to the concept of 4Cs (12 items) which is related to the outcome of implementing the new roles of teachers and Bloom's Taxonomy. Data collection was conducted using Google Form due to time constraint.

Results

Demographic

The demographic of the respondents is shown in Table 1. Most of the respondents are female (21; 70%) compared to male (9; 30%) and the respondents are mainly from the age group of 31 - 40 years old (15; 50%). Majority of the teachers are Chinese (14; 46.7%) and most of them are teaching undergraduate students (20; 66.7%).

Table 1 Demographic of the respondents

Demographic		**Frequency**	**Percent**
Gender	Male	9	30
	Female	21	70
Age	21 - 30 years old	2	6.7
	31 - 40 years old	15	50
	41 - 50 years old	10	33.3
	51 - 60 years old	3	10
Race	Malay	13	43.3
	Indian	14	46.7
	Chinese	3	10

Teaching level	Foundation	6	20
	Diploma	3	10
	Undergraduate	20	66.7
	Postgraduate	1	3.3

Learning Mindset

Table 2 shows respondents' feedback and observation on students' learning mindset. The average score for teachers' feedback on students learning mind-set is 37.8% whereas the average score for teachers' observation on students' learning mindset is 36.7%.

Table 2 Learning mind-set average score among the respondents

Part B.1: Learning mind-set (Teachers' feedback on students' learning mind-set.			
No.	Question & answer	Percentage	Average
	How often do you ask your student's feedback about the following?		37.8
1	Are there subjects that you find it challenging to understand? (Quite often)	33.3	
2	What do you do if you obtain bad results? (Quite often)	33.3	
3	Do you have the motivation to obtain better results? (Quite often)	46.7	
Part B.2: Learning mind-set (Teachers' observation on students' learning mind-set)			
No.	Question & answer	Percentage	Average
	How often do you observe the following?		36.7
1	Students willing to learn from students who have good academic results. (Quite often)	36.7	
2	Students are comfortable with their current results and do not want to strive for more. (Quite often)	43.3	
3	Students adopt 'copy & paste' method to complete the task easily. (Often)	36.7	
4	Students refuse to pay attention during challenging subject classes. (Quite often)	30.0	

Roles and Qualities of Teachers

Table 3 shows the roles and qualities of teachers among the respondents. The average score for the roles involved in class is 56% whereas the average score for the quality required of teachers to teach in 21st century is 55.8%.

Table 3 Roles and qualities of teachers

Part C.1: Roles of teachers			
No.	Question & answer	Percentage	Average
	What roles are you involved in class?		56
1	The prompter (Agree)	56.7	
2	The resource (Agree)	60.0	
3	The assessor (Agree)	66.7	
4	The participant (Agree)	40.0	
5	The tutor (Agree)	56.7	
Part C.2: Qualities of teachers			
No.	Question & answer	Percentage	Average
	What do you think the qualities required of teachers to teach in 21st century?		55.8
1	A teacher needs to know the students and their mind-sets (Agree)	53.3	
2	Teachers should be collaborative problem-solvers themselves (Agree)	53.3	
3	A teacher needs to understand how students go about learning with information technology usage (Agree)	63.3	
4	A teacher needs to be creative in developing curriculum (Agree)	53.3	

Bloom's Taxonomy

Table 4 shows the concept of Bloom's Taxonomy used by the respondents in order to change the negative learning mind-set of students in the 21st century learning environment. The respondents recorded the highest score in Bloom's Taxonomy 'creating' (58.9%; average) followed by 'understanding' (48.3%; average), 'analysing' (46.7%; average) and 'evaluating' (42.2%; average).

Table 4 Bloom's Taxonomy

Part D.1: Bloom's Taxonomy (Understanding)			
No.	Question & answer	Percentage	Average
	How often do you encourage your students to do the following?		48.3
1	Describe detailed concepts in my class. (Often)	43.3	
2	Discuss detailed concepts in my class. (Often)	53.3	
Part D.2: Bloom's Taxonomy (Analysing)			
No.	Question & answer	Percentage	Average
	How often do you allow your students to do the following?		46.7
1	Compare the terms taught in class. (Quite often)	46.7	
2	Debate the terms taught in class. (Often)	46.7	
3	Differentiate the terms taught in class. (Often)	46.7	
Part D.3: Bloom's Taxonomy (Evaluating)			
No.	Question & answer	Percentage	Average
	How often do you encourage your students to do the following?		42.2
1	Choose the best problem-solving solution. (Often)	43.3	
2	Justify the best problem-solving solution. (Often)	40.0	
3	Recommend the best problem-solving solution. (Often)	43.3	
Part D.4: Bloom's Taxonomy (Creating)			
No.	Question & answer	Percentage	Average
	How often do you allow your students to do the following?		58.9
1	Design solutions for task given in classes. (Often)	60	
2	Plan solutions for task given in classes. (Often)	60	
3	Generate solutions for task given in classes. (Often)	56.7	

The 4Cs Concept

Table 5 show the concept of 4Cs based on the respondents' observations towards their students. Critical thinking (51.1%; average) recorded the highest average score followed by communication (44.4%; average), collaboration (37.7%; average) and creativity (33.4%; average).

Table 5 The 4Cs Concept

Part E.1: Critical thinking			
No.	Question & answer	Percentage	Average
	How often your students do the following?		51.1
1	Make comparison from different sources to complete a task. (Often)	56.7	
2	Create their own interpretation based on their understanding about your subject. (Often)	56.7	
3	Analyse problem-based task to find for solutions. (Often)	40.0	
Part E.2: Collaboration			
No.	Question & answer	Percentage	Average
	How often your students do the following?		37.7
1	Work in a group to complete assignments. (Very often)	40.0	
2	Do presentation as a team for the completed assignment in class. (Often)	40.0	
3	Provide feedback to peer during presentation. (Often)	33.0	
Part E.3: Communication			
No.	Question & answer	Percentage	Average
	How often your students do the following?		44.4
1	Use oral presentations (charts, tables, diagrams) (Often)	46.7	
2	Project their ideas using posters, videos or other forms of tools. (Often)	43.3	
3	Conduct Q&A sessions during presentations. (Often)	43.3	
Part E.4: Creativity			
No.	Question & answer	Percentage	Average
	How often your students do the following?		33.4
1	Use mind mapping or brain storming. (Often)	26.7	
2	Create their own ideas about how to solve a problem-based task. (Often)	36.7	
3	Create their own notes based on lesson taught in classes. (Often)	36.7	

Discussion and Conclusion

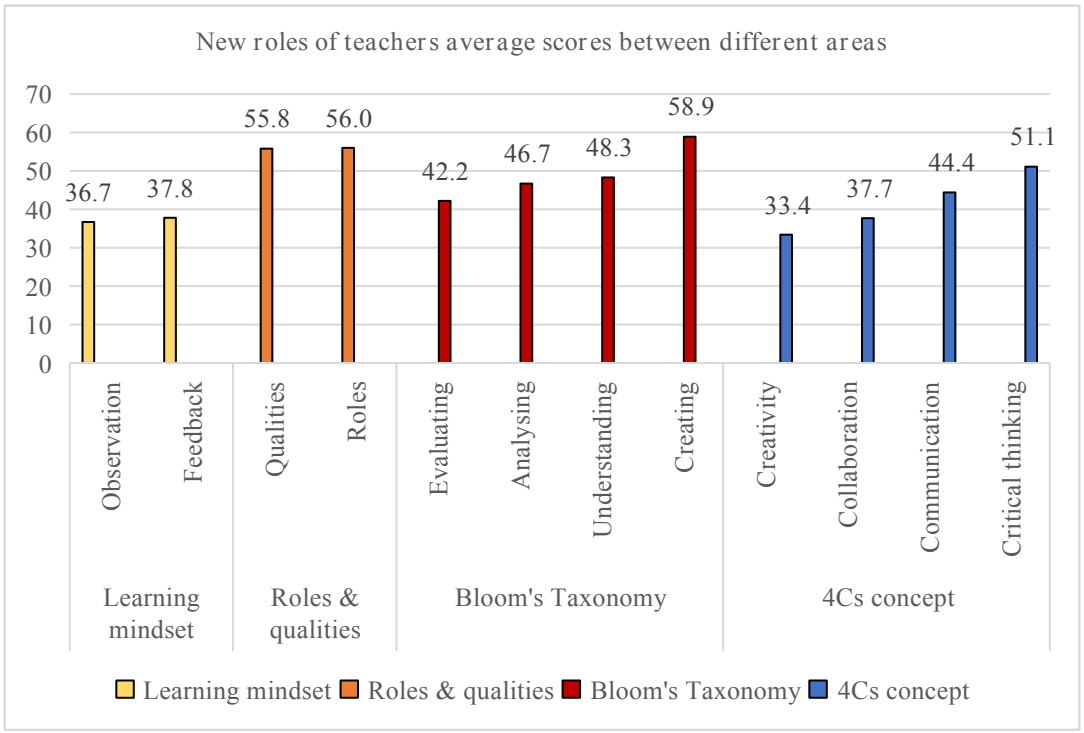

Figure 1 New Roles of Teachers Average Scores between Different Areas

Based on the feedback of the respondents on student's learning mindset, most of them often ask students whether they have the motivation to obtain better results. This refers to past findings which stated that teachers should give early feedback often and believe that students can do well (Shrivastava, 2012). Based on the respondents' observation, they find that quite often students are comfortable with their current results and do not want to strive for more. Shrivastava (2012) suggested that teachers should help students to find personal meaning so that they will continue to progress. This reflects the importance of teachers to know their students' learning mindset so that students will not have negative learning mindset. Most of the respondents agree that teachers should play the role as assessors. The findings are consistent with past studies which reported that teachers who act as assessors will understand students' attitudes, skills, method of learning and their progress (Francisco, 2014). Majority of the respondents think that the quality that teachers need is to understand how students go about learning with information technology usage. This finding is supported by past study stating that technology will be regarded as an educational tool to assist teachers in facilitating learning (Wedlock & Growe, 2017). This is important as it will continuously create interest in student learning.

The greatest percentage scored by the respondents for 'creating' under Bloom's Taxonomy where they often allow students to design and plan solutions for the task given. Previous study stated that by doing this, it shows that students understand the task given, construct plan and generate solutions (Eber & Parker, 2007). Majority of the respondents often discuss detailed concepts in their classes. Past study analysis stated that students will be interested in learning and they will feel like they are part of a learning community. Based on Bloom's Taxonomy 'analyse' the respondents quite often allow students to compare, debate and differentiate terms taught in class which related to previous study done by Kelly (2019). She mentioned that, students will be able to understand the fundamental structure of knowledge and will be able to differentiate between fact and opinion. Most of the respondents encourage students to choose and recommend the best problem-solving solution. This result is consistent with past study done by Kelly (2017) stating that students will be able to make judgement about certain ideas and utilise all that they have learned.

Based on one of the 4Cs concept of 'critical thinking', most of the respondents often ask students to make comparison from different sources to complete a task and create their own interpretation based on their understanding about the subjects. Past studies done by Ferlazzo (2011) stated that critical thinking help strengthen the brain where students will be able to be creative and innovative. The respondents often ask students to work in group to do presentation in completing the assignment in class. This result is related to a study done by Berge (2000) stated that students become more collaborative when they work as a group. Majority of the respondents often asked students to use oral presentations to communicate. According to Applied Educational System [AES] (2019), communication is important to aptly transmit ideas and avoid confusion. Most of the respondents often ask students to create their own ideas about how to solve problem-based task and create their own notes based on lesson taught. Previous study stated creativity allow students to perceive concepts in different perspective (AES, 2019).

Although some teachers are willing to take up the new roles, there are some limitations. Firstly, we cannot change students' mindset overnight and it takes time to monitor their progress. Secondly, not all teachers want to take the initiative to adopt the new roles of teachers and implement Bloom's Taxonomy concept as they still believe in traditional roles. Further research should focus on specific roles of teachers and relate it to the implementation of Bloom's Taxonomy and S.M.A.R.T concept. Also, the small sample size is one of the limitations as well as it could limit the applicability of the findings.

In general, teachers play an important role in the 21st century learning in order to change students' negative learning mindset. It is essential for teachers to be aware of the students' learning mindset and be enthusiastic in helping students' learning process. The new roles of teachers work hand-in-hand with the qualities of teachers that are required to teach in 21st century. Teachers must be willing to make changes and infuse different techniques so that students will not adopt negative learning mindset. The new roles of teachers can be exercised by using the S.M.A.R.T and Bloom's Taxonomy concept which will enable teachers to change students' negative learning mindset. The structure of the class should be created based on the students' level of understanding. The role of teachers as motivators will enable students to feel motivated hence building good rapport between teachers and students. Students will cultivate the interest in learning new things especially when technology is implemented in class such as blended learning tools. The standard of the assessment set should be relevant to the subjects taught so that students are not afraid of assessments. The implementation of Bloom's Taxonomy in the 21st century learning is essential because students will be able to sustain themselves to be competitive and employable in the 21st century environment. Hence, they will be trained to not have negative learning mindset as they already have proper teachings by their teachers. After implementing S.M.A.R.T and Bloom's Taxonomy concepts, there is a possibility that students will have the 4Cs (creativity, collaboration, communication & critical thinking) in them which are the main focus in 21st century learning. Students will be able to find solution to problems, work with the society, communicate with people and innovate.

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