COOPERATIVE LEARNING ENVIRONMENT
WITH THE WEB 2.0 TOOL E-PORTFOLIOS

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ABSTRACT

In recent years, the development of information and communication technology (ICT) in the world and Malaysia namely has created a significant impact on the methods of communicating information and knowledge to the learners and consequently, innovative teaching techniques have evolved to change the ways teachers teach and the ways students learn. This study main focuses are directed on developing a cooperative learning environment to promote an active learning environment of smart schools in Malaysia. Within this learning process, multimedia technology and Web 2.0 tools, namely, MyPortfolio were integrated to provide the students to learn on their own as well as to document their progress and experience within this cooperative learning environment. The core purpose of this study is to establish the impact on student learning, their perceptions and learning experiences of the cooperative learning environment using web 2.0 tools among the smart secondary schools students in Malaysia. Surveys were conducted to students to ascertain their reaction towards these learning environment activities. The results of this project were encouraging as the students managed to cope with each other to reach their common goal. The usage of blogs acts as an important tool to enhance team cooperation and to foster a learning community within the class.

Keywords: Cooperative learning, MyPortfolio, blogs, Web 2.0, multimedia

INTRODUCTION

Primarily, traditional lectures have been the form of learning and teaching used in the Malaysian educational system for decades especially in schools. Even though this process of knowledge transfer has its advantage, it has limited benefit on today's IT oriented system (Motschnig-Pitrik & Holzinger, 2002; Neo, 2005). In recent years, information technology (ICT) has increasingly changed the scenery in the Malaysian educational field from primary, secondary and up until universities. It is thus merely affecting the communication strategies in the education environment and influencing the mode of teaching by the educators and the process of learning by the students. These changes in the Malaysian education field are a form of result from the educational reforms that have been happening in the United States in the past two decades (Lambert and McCombs, 1998).

The reformation has a meaning of focus on student-centred learning relatively than on teaching, pedagogy, instruction and schools curiculum. It is believes to sought and dispute the fundamental assumptions about student learning, where the process of learning is now defined as "the ability to retain, synthesize, and apply conceptually complex information in meaningful ways" (Lambert & McCombs, 1998; Neo, 2005).

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Multimedia and technology involvement enables these reforms to be efficiently carried out because in designing multimedia applications, new insights into the learning process of the designer can be discerned, as the learner is forced to represent information and knowledge in new, innovative and creative ways (Agnew, Kellerman & Meyer, 1996; Neo, 2005). Plenty of studies have found that team-based and project-based activities support an active learning environment among students (Hung & Wong, 2000; Bennet, Harper & Hedberg, 2001), and therefore these activities are one of the key elements to search and learn. Currently, with improved emphasis on social constructivism, cooperative learning is partially a reaction to societal changes which focuses more on team work as communication skills are becoming increasingly more important in the knowledge-based society (McWhaw, Schnackenberg, Sclater & Abrami, 2003). Apart from that, cooperative learning also represents a shift from a teacher-centered approach to a more student-centered learning in groups. Thus, it creates an excellent prospect for students to engage in problem solving with the help of their friends and group members instead of solving the problem by themselves (Effandi & Zanaton, 2007; Neo, Neo & Kwok, 2009).

COOPERATIVE LEARNING

The challenges in education field nowadays are to teach students effectively the diversity ability and differing rates of learning of each students. Teachers are anticipated to teach in a way that enables students or pupils to learn concepts while acquiring the skills process, positive attitudes and values and problem solving skills. A variety of teaching strategies have been adopted for use in the classroom, ranging from teacher-centered approach to students-centered (Effandi & Zanaton, 2007).

Cooperative learning is believe to be a learning process which is most effective when students are actively involved in sharing their ideas and work cooperatively and helpfully to complete academic tasks (Effandi & Zanaton, 2007).

An instructional method of cooperative learning has been used as both a learning tool at various levels of education and in various subject areas respectively. Johnson, Johnson and Holubec (1994) proposed five essential elements of cooperative learning:

> ➢ Positive interdependence: It is believe that the success of one learner is dependent on the success of the other learners.
> ➢ Promotive interaction : Individual can achieve promotive interaction by helping each other, exchanging resources, challenging each other's conclusions, providing feedback, encouraging and striving for mutual benefits.
> ➢ Individual accountability: Teachers should assess the amount of effort that each member is contributing. These can be done by giving an individual test to each student and randomly calling students to present their group's work.
> ➢ Interpersonal and small-group skills: Teachers must provide opportunities for group members to know each other, accept and support each other, communicate accurately and resolve differences constructively.
> ➢ Group processing: Teachers and educators must also provide opportunities for the class to assess their group progress. Group processing enables the group to focus on facilitates the learning of cooperative skills, working on good working relationship and ensures that members receive feedback.

Essentially, cooperative learning represents a shift in educational paradigm from teacher-centered approach to a more student-centered learning in small group. It creates excellent opportunities for students to engage in problem solving with the help of their group members (Effandi, 2005). In Malaysia, research on cooperative learning has been carried out since 1990s (Nor Azizah & Chong, 2000). The revised curriculum of the primary and secondary schools emphasized the use of cooperative learning as an alternative to traditional method of teaching. (Kementerian Pendidikan Malaysia, 2001). The effectiveness of cooperative learning is well established by research. Cooperative learning formed many learning opportunities to the students and teachers that do not only typically occur in traditional classrooms. According to Nor Azizah (1996), cooperative learning has the potential in science classrooms because of the following factors:

> science students always work in group during executing the science experiment in the laboratory therefore what they need is the skill to work in group
> the science laboratory is spacious with intact desk and chairs allowing the students to move around freely
> science classes are usually two periods with 40 minutes each which provide enough time for cooperative learning between students and
> during experiment, there are many good values which can be inculcated e.g cleanliness, trustworthy etc. Siti Rahayah (1998) further stated that teachers and educators need to try implementing cooperative learning in order to enhance scientific skills and to increase achievement.
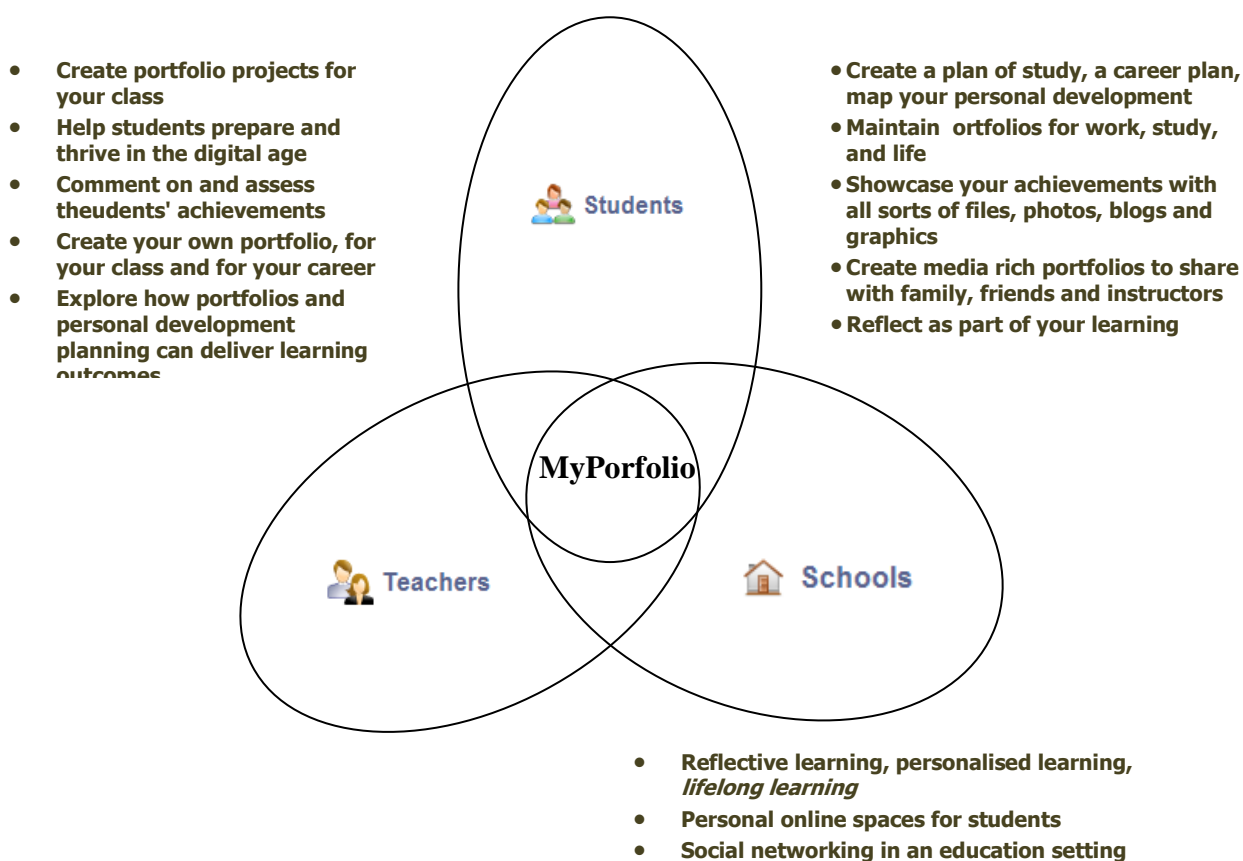
EPORTFOLIO-SMART SCHOOLS IN MALAYSIA

Smart School is a learning institution which has been reinvented in terms of learning and teaching methods and also the school administration system in order to prepare the students for the Information-Based Society and ICT. The form that based this will be put upon the creativity and better management of information that facilitated through the use of technology where the students, teachers, administrators and parents are better equipped for the challenges of the information age nowadays.

Lankes (1995) define the electronic portfolios (eportfolio) as a "purposeful collection of student's work that exhibits systematically the students' effort, progress and achievements". Portfolios are shown to be "purposeful" and "systematic" and they are important for both students and teacher to be aware of the reason and purpose to keep portfolio. Thus, the purpose of maintaining an e-portfolio can be classified into representation reflection and revision. MyPortfolio is another Web 2.0 tools e-portfolio which provides a personal learning environment to record and showcase evidence of achievement, manage development plans, set goals, and create online learning communities.

MyPortfolio provides a student centred and personalised space to bring together formal school learning activity and informal learning experiences. The key benefit of MyPortfolio is that a learner will develop his or her driven environment being on a shared service environment in a way a pan sector learner community may flourish. MyPortfolio also brings together the benefits of the social software and leading education technology in a safe education focused environment. MyPortfolio is also a medium of interaction between teacher and students and also students and students which resulted in the establishment of a learning community where the members of a group cooperated towards a common goal with help of an instructor.

Figure: 1 shows the relationship of teacher, student and school element in MyPortfolio.

- Create portfolio projects for your class
- Help students prepare and thrive in the digital age
- Comment on and assess theudents' achievements
- Create your own portfolio, for your class and for your career
- Explore how portfolios and personal development planning can deliver learning outcomes

Students

- Create a plan of study, a career plan, map your personal development
- Maintain ortfolios for work, study, and life
- Showcase your achievements with all sorts of files, photos, blogs and graphics
- Create media rich portfolios to share with family, friends and instructors
- Reflect as part of your learning

MyPorfolio

Teachers

Schools

- Reflective learning, personalised learning, *lifelong learning*
- Personal online spaces for students
- Social networking in an education setting

Figure: 1
The instructional relationship in the cooperative learning environment

THE STUDY

This study involves two smart schools in Malaysia. Twenty students from these schools participated in the study which comprises of (N=20) students from School A and (N=20) students from School B. The students involved are form 4 science stream students where MyPortfolio was selected as the web 2.0 tool in this research. The class of twenty students were divided into 5 groups comprises of 4 students in one group. Each of the group was given one subject in their curriculum syllabus to work on. Then, these groups will be subdivided into another 2 groups where they were paired and work on the content of their subject. The curriculum subjects chosen in this study is physics. Once a week, they used the school's computer room and execute the work under the supervision of their physics teacher.

The objective of this project is to present an overview of cooperative learning on multimedia as well as content creation. The project is an eight weeks project. The project was to create a physics blog by using the content of Chapter 1: Introduction to Physics. The eight week long project will therefore create a cooperative learning environment for each student in the group. The student was aged 14 years old and almost all of them have no prior knowledge in multimedia as well as skills to complete the course. They will teach basic skills in using the MyPortfolio and how to create the blog. Figure: 2 show the cooperative class structure of the class.

Stage 1: Division of Small Groups
In this project, 20 students were divided into 5 groups.

**Stage 2: Sub-Groups Blog Development**
The small groups will then be sub divided into 2 pairs where they will work in pair to come out with the content of chapter 1 in their physics subject. Also, they need to use multimedia or web 2.0 tools in order to build a creative and innovative blog.

Stage 3: Class Blog
After turning in their respective proposal, the sub-group will then need to create an overall blogsite for chapter X.

Here, similar sub-groups had to combine with each other and to filter out any similar information as well as to compile more comprehensive theory of their topic.

At the end of the project, each group had to present their blog to the class, and display their blogpages, interactive features as well as their development of the blog.
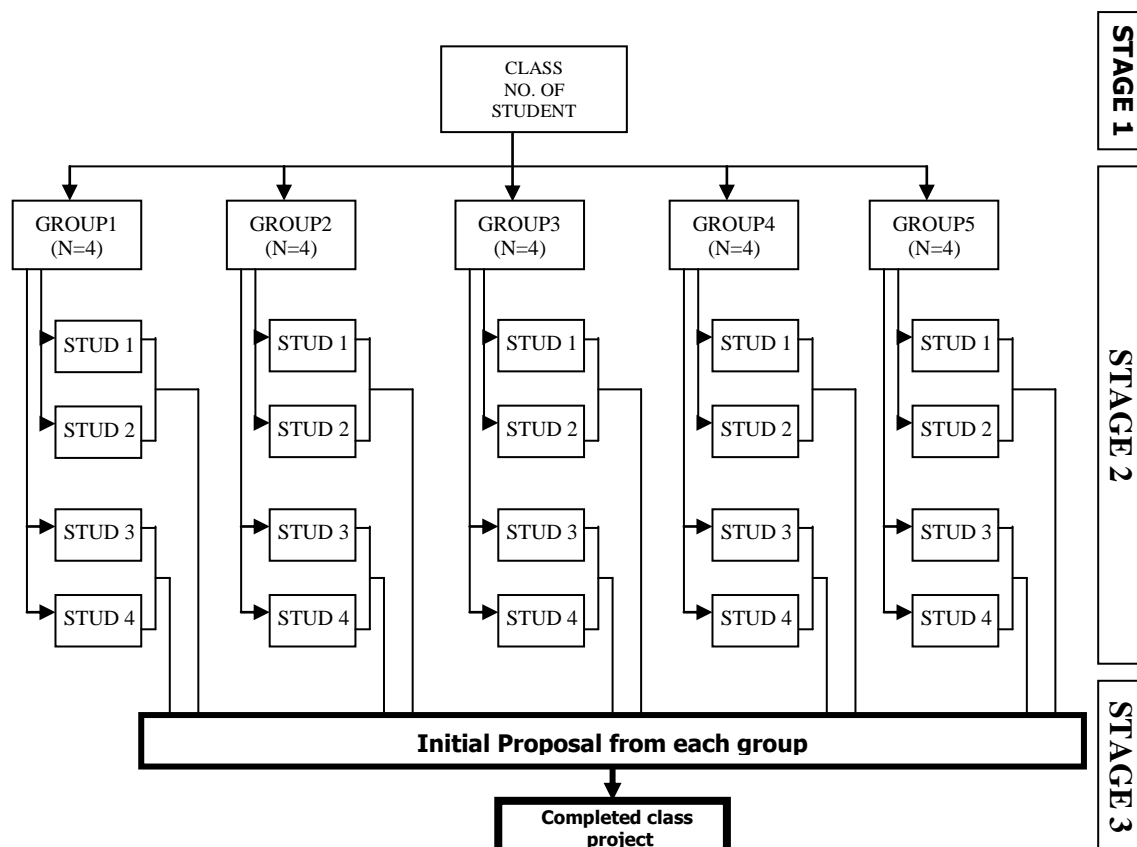
Figure: 2
Conceptual Framework of the Form Four Subjects MyPortfolio
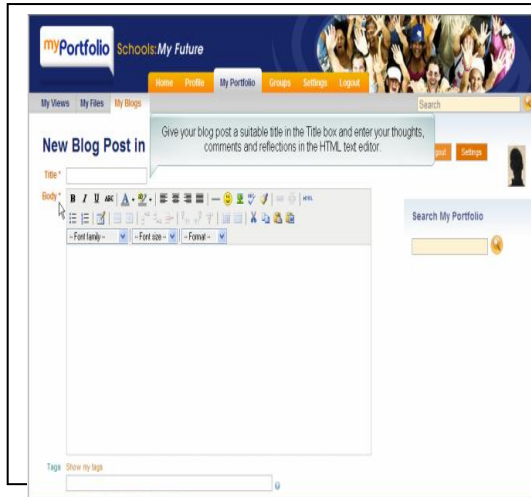
Figure: 3 Screenshot of MyPortfolio

Figure: 4 Startup to blog using MyPortfolio

Data Analysis and Results

In this survey, two Likert-scale surveys were administered to the students in this cooperative learning environment to obtain their attitudes towards learning environment using MyPortfolio. The Likert scale used in both surveys was from 1 to 5 (1=Strongly Disagree (SD), 2= Disagree (D), 3=Undecided (U), 4=Agree (A) and 5=Strongly Agree (SA). The first survey had 11 items and was used to obtain the students attitudes towards MyPortfolio. While the purpose of the second survey, which has 7 items, was used to obtain the students attitudes towards cooperative learning. It was also important to note that the students have never worked in a cooperative learning environment previously nor have they ever created a blog before this assignment. This would be their first experience to do so.

Table 1 shows the results of MyPortfolio and cooperative learning of form four students from two smart schools in Malaysia. Each of the survey item will be analyze using the table breakdown of the Likert scale items in frequency (f), percentage (%), mean (M) and standard deviation (Std Dev). In order to locate the reliability of the surveys, statistical analysis of a reliability of above 0.6 is deemed to have satisfied the reliability of the survey. The overall reliability or the Cronbach's Alpha of the cooperative survey and blog survey were 0.973 and 0.847 respectively. Thus, both surveys were deemed reliable. The resulting mean items in both surveys are shown in descending order.

As referred to Table 1, it shows that students give a positive feedback on the experience in using the MyPorfolio in their cooperative learning activities. The mean results of this survey were positive as they are ranged from 3.30 to 4.65. This indicated that they found wring in blog; i.e. MyPortfolio is useful to them especially in their learning process.

MyPortfolio helps them to reflect upon: what they have achieved, where their ambitions are, what they need to get there and how learning can help them do that.

The students also indicated that they had a good experience developing their blog through MyPortfolio as this is their experience in doing so. Overall, it can be seen that the students were able to learn in cooperative disposition and use the web 2.0 tools as their learning medium.

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Table: 1
Results of the MyPortfolio and Cooperative Learning

No	Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Dev
		f(%)	f(%)	f(%)	f(%)	f(%)	(M)	(SD)
About MyPortfolio								
1	MyPortfolio has made me more interested in my study	0.00	0.00	13.6	59.1	27.3	4.00	0.679
2	MyPortfolio consumes a lot of my time in class	0..00	1.50	7.6	66.7	24.2	4.03	0.660
3	MyPortfolio consumes a lot of my time outside of the class	1.50	3.00	4.50	42.4	48.5	4.15	0.949
4	Inform me about my friends' activities	0.00	0.00	3.00	63.6	33.3	4.23	0.530
5	Help me organized my work very well	0.00	0.00	3.00	63.6	33.3	4.23	0.530
6	Give me a new approach of presenting using technology	6.10	9.10	6.10	54.5	24.2	3.50	1.261
7	Help me to learn better	0.00	1.50	65.2	0.00	33.3	3.53	0.933
8	Help me to be an independent learner	1.50	7.60	42.4	33.3	15.2	3.35	0.949
9	MyPortfolio help me to learn outside the classroom in an informal manner	0.00	6.10	18.2	39.4	36.4	3.83	0.984
10	Comments by my teacher were very helpful	0.00	12.1	33.3	48.5	6.10	3.30	0.853
11	Comments made on my works were very helpful to improve my learning process	1.50	13.6	27.3	33.3	24.2	3.40	1.128
N=40	Cronbach's Alpha=0.973							
Cooperative Learning								
12	MyPortfolio enable me to communicate with my friends	0.00	0.00	3.00	15.2	81.8	4.65	0.580
13	MyPortfolio enable me to cooperate with my friends	0.00	3.00	16.7	56.1	24.2	3.83	0.813
14	MyPortfolio is challenging	0.00	4.50	21.2	33.3	40.9	4.08	0.992
15	It helps me to be independence in completing my work	0.00	0.00	13.6	31.8	54.5	4.23	0.800
16	I can review my study with my friends at home	0.00	0.00	1.50	43.9	54.5	4.43	0.549
17	MyPortfolio helps me enjoying my time discussing schools subject with my friends	0.00	0.00	0.00	39.4	60.6	4.50	0.506
18	MyPortfolio helps us to solve our problem as a group	0.00	0.00	7.60	59.1	33.3	4.15	0.622
N=40	Cronbach"s Alpha=0.847							

DISCUSSION

The primary objectives of this study are to discover the students' experiences in cooperative learning environment using MyPortfolio.

From the study, there were several factors contribution and thus resulted to students working in a cooperative learning environment. It is necessary for the students to cooperate with each other and use multimedia technology namely MyPortfolio as a means to construct knowledge in their learning process. Besides the surveys, an open-ended questionnaire was given to the students to obtain the students' feedback in this learning environment and from the answers given, an analysis will be done. Comments from the students will be presented as part of the discussion below. From the analysis, the overall findings in this study are as the following:

Cooperation Among Team Member
It can be seen from the results, the students indicated that they were able to cooperate with each other. They understood about the importance of cooperating with their teammates in order to help each other to complete the project. The results from this project show that they were able to cooperate with their teammates (Item 12; M=4.65, Std Dev=0.580) and enjoyed working in this cooperative learning environment (Item 13: M=3.83, Std Dev=0.813). The survey also indicated that the students in the groups worked well with each other as the majority of the students responded positively to the items in the survey. The students felt that their group members contributed to the completion of the project and communicated well with each other (Item 17: M=4.5, Std Dev=0.506). They also felt that they worked well together to solve problems (Item 18: M=4.15, Std Dev=0.622).

Fun and Challenging
As for working in a cooperative environment, the students found it very much challenging. The results indicated that the project given to them was challenging (Item 14: M=4.55, Std Dev=0.992). This was primarily because it was their first time to learn using MyPortfolio as they had no prior experience using such tool. The students also indicated that they thought that cooperating with their course mates a challenge but had enjoyed the experience (Item 16: M=4.43, Std Dev=0.549). They also indicated that they manage to enhance their learning of the subject matter while working in a cooperatively (Item 17: M=4.50, Std Dev=0.506). Since it was their first time doing so, they were not used to working cooperatively on a project. Many were perplexed to what they required to do in the beginning but at the end of their experience they indicated that they had fun learning in such a manner.

Individual Responsibility
Apart working in a group, the students have individually understood their role within the group. Results tabulated from the survey showed that each member of the teams knew exactly what their role was in the team (Item 15: M=4.23, Std Dev=0.800). Individually, the students are really satisfied with their contribution in this project Relevance to the questionnaires, some of the comments from students are presented in Table 2 to 5 when asked their opinion on their individual responsibility when working in a cooperative team and if they are satisfied with their individual contribution.

Myportfolios as a Learning Tools
From the use of blog survey, the results indicated that the students were able to use the blogs as part of their learning process in doing their assignments. They found MyPortfolio as a good experience in their learning and ignite their interest in studies (Item 1: M=4.00, Std Dev=0.679). The students confirmed that by writing in blogs, they were able to organized their work very well (Item 5: M=4.23, Std Dev=0.530). This was an important attribute in the blog as by doing so, it allowed the students to reflect on their work and to learn from them.

In addition, the majority of students liked using the blogs as it help them to learn better (Item 7: M=3.53, Std Dev=0.933) and found that using the blogs can help them learn better outside the classroom in an informal manner (Item 9: M=3.83, Std Dev=0.984).Overall, MyPortfolio served as an important tool in the learning environment. The students enjoyed using it and found it useful in their learning.

To Be an Independent Learner

The results from the usage of blog survey indicate that the students were satisfied to use the blogs as a learning tool in this cooperative learning environment. All the students agree that MyPortfolio helps them to be an independent learner (Item 8: M=3.35, Std Dev=0.949). They found using the blogs made them a more independent student as they could continue to work on their.

The results also determined that the majority of the students thought that MyPortfolio consumes a lot of their time in class and outside the class (Item 2: M=4.03, Std Dev=0.660 and Item 3: M=4.15, Std Dev=0.949).

This indicates that by being independent leraner, it also cost a lot of their time during class session and also outside the class during their free time.

Working In a Learning-Based Community

Using MyPortfolio to document the process of developing the students' blogs in the cooperative learning environment was very helpful to create a learning community in the class room.

Table: 2
Comment on survey questions from Student A

	Student A	
No	**Survey Question**	**Comment**
1.	Cooperation among team member	It is great to say that the teamwork between me and my group members was a success. We can discuss and communicate without quarrel and considerate one another opinion and situation..
2.	Fun and challenging	Through the whole process I think it was definitely a very wonderful experience. It was definitely very fun doing all this research and see how others progress. Definitely the project had given us more in depth about how a website is being created.
3.	Individual responsibility	I am in-charge of festivities in the culture and searched for information and data, design my festivities interface. I am satisfied with my work. With not much time and lack of digital design knowledge, we are still able to produce this good output.
4.	MyPortfolio as a learning tools	Yes! Able to reflect my understanding of the assignment and challenged my learning process as well as helped me learn outside the classroom
5.	To be an independent learner	The blogs help me arrange my thought and makes me want to submit my work on the blogs on time
6.	Working in a learning based community	They help me to learn new skills by viewing other students work

They were capable to see other groups work and designs which the majority of students found this helpful in their learning. Students were also able to compare their work with other groups in the cooperative learning environment.

(Item 4: M=4.23, Std Dev=0.530). This feature allowed the students in this cooperative learning environment to form a learning community within the class. Students were able to allocate their work in progress and documentation with other students and the lecturer. Also they were able to leave comments to further enhance their work.

The majority of students found the comments made by their friends peers to be useful to help them improve their work (Item 11: M=3.40, Std Dev=1.128) as well as comments left by their teacher (Item 10: M=3.30, Std Dev=0.853).

To validate the findings, Table 2 until 5 were some of the students' comments from the open-ended questions based on their view when working in cooperative teams.Overall, the analyses of the results indicated that the students were able to benefit from working in a cooperative environment and to help one another in completing a common goal.

They also are enjoying themselves while using MyPortfolio and pay a full attention throughout this project which they treated it as part of their learning process.

From the results, it can be seen that the students were actively participating in their learning process individually and also as part of a learning community.

Apart from learning, they also develop their skills in the usage of multimedia and Web 2.0 tools which is one of the important elements in this rapid developing country.

Table: 3
Comment on survey questions from Student B

Student B		
No	Survey Question	Comment
1.	Cooperation among team member	Cooperation from each group member is the main aspect to succeed. From my overall experience of this project, me and my team had a quite good understanding in each other and give a balance commitment to produce this final output. We have discussed many things to accomplish something and to handle problems during this project. We also have divided works to each other to smoothen the process of creating this project. From this project, I noticed that participation from each group member in accomplish a goal is very important
2.	Fun and challenging	For me doing this assignment is fun because this task needs me to cooperate with my team for making this assignment successful. So to be honest, I like this project very much. This project gives me a chance to know my team closely
3.	Individual responsibility	As group leader, I lead my group to the correct direction. I am very satisfied with my work and leadership abilities.
4.	MyPortfolio as a learning tools	Yes. Able to exchange opinions, communicate with the team mates and learn from each other
5.	To be an independent learner	I become a more independent on doing my coursework. I can understand more on what I had learn and I can get information on how my friends to their work.
6.	Working in a learning based community	Exchange ideas and comments, source of reference for projects and exchange knowledge.

Table: 4
Comment on survey questions from Student C

Student 3		
No	**Survey Question**	**Comment**
1.	Cooperation among team member	It is great to work in a group as the work can be distributed evenly among the group member. The works given are equally the same and everybody in the group will help each other.
2.	Fun and challenging	The work that need to be is fun and I can play with imagination on how to make our blog fun and creative. Through that, I learnt a lot about web design. And, it is a lot of fun too.
3.	Individual responsibility	Personally, I think this work really built up my personal responsibility on the work need to be done.
4.	MyPortfolio as a learning tools	This tool is not really difficult if you really understand how to use it. It took me about two days to understand the whole process.
5.	To be an independent learner	MyPortfolio also helps me to revise my studies about certain topics very well as we already sorted out all the subjects in the easiest way.
6.	Working in a learning based community	Everybody in my class discuss our subjects very well after we have completed our blog on the MyPortfolio. I am glad that we did this assignment. It really helps me a lot.

Table: 5
Comment on survey questions from Student D

Student D		
No	**Survey Question**	**Comment**
1.	Cooperation among team member	As a group member, I am very pleased that every person in my group cooperate really well. We help each other if one of us faced any problem. Hence, this atmosphere helped strengthen our relationship as classmates.
2.	Fun and challenging	Throughout this project, I found it very interesting, challenging and fun as they have been some tools which I never encounter before and when I do know how to use it, I felt really impressed.
3.	Individual responsibility	I do keep on track of my own task when handling this project. I will make sure that all the part that were given to me will be completed on time. This helped me to become dependable and trustworthy.
4.	MyPortfolio as a learning tools	This tool does help me in learning the subject in our curriculum. Even though, they are many other tools that can be used, I believe that MyPortfolio do have some good qualities in enhancing the secondary school students learning skills.
5.	To be an independent learner	It seems that MyPortfolio do help me to become an independent learner as I use it as a medium of reference in order to do my homework when I go back home.
6.	Working in a learning based community	MyPortfolio allows me to share information with my friend about certain subjects that we have learnt previously in the class. And we can discuss about any problems and solve it together through the web.

CONCLUSION

In this study, students are required to work as a group for a project development of a form 4 physics subject. They were required to cooperatively develop a blog comprises of Physics sub topic Chapter 1: Introduction to Physics. Students constructed their knowledge based and concepts of the subjects in this cooperative learning environment and become active participants in the learning process. In the cooperative learning, the students learn to communicate and socially negotiate with one another and learn from each other in order to achieve their goal, thus providing evidence that learning is a social activity (Vygotsky, 1978). The students were able to enhance team work skill and improve their leadership skills, communication skills and interpersonal skills by which they achieve that through presentation and dealing with their team mates (Archer-Kath, Johnson and Johnson, 1994). Apart from that, the cooperative learning environment has received a positive and encouraging reaction from the students and teacher from the respective schools as shown by the students' work. It shows on the motivating response to their learning process and their enthusiasm in using multimedia technology to create their projects. The permeation of multimedia technology into the educational world has created an outstanding impact on Malaysian educationalists and teachers as well as to enabling students to use technology in the classroom to create a technology-supported learning environment such as the cooperative learning mode.

This cooperative learning environment also not only displayed many characteristics of the learner, even though some of the learning content and information were prescribed by the teacher. During working cooperatively in the groups, students will share information gathered and offer helping hands throughout this project. They act as a team very well where worked together to achieve group goals successfully. With the use of blogs, team members, peers as well as the teacher were able to comment on their work progress.

As the result indicated, the students liked to develop and used blogs because they served as an effective tool and help to improve learning-space and community in and out of the classroom. In conclusion, the structure of cooperative learning, the instructional relationship between the teacher, students and schools and the technology-supported cooperative learning framework provide the essential and viable constructive guide to support this area of learning.

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