Journal of Applied Science and Agriculture, 9(11) Special 2014, Pages: 63-68

AENSI Journals

Journal of Applied Science and Agriculture

ISSN 1816-9112

Journal home page: www.aensiweb.com/JASA

21st Century Core Soft Skills Research Focus for Integrated Online Project Based Collaborative Learning Model

[1]Sharifah Nadiyah Razali, [2]Hanipah Hussin and [1]Faaizah Shahbodin

[1]*Faculty of Information and Communication Technology, Malaysia Technical University Malacca, Hang Tuah Jaya, 76100, Durian Tunggal, Melaka, Malaysia*
[2]*Centre of Language and Islamic, Malaysia Technical University Malacca Hang Tuah Jaya, 76100, Durian Tunggal, Melaka, Malaysia*

ARTICLE INFO

Article history:
Received 25 June 2014
Received in revised form
8 July 2014
Accepted 10 August May 2014
Available online 30 August 2014

Keywords:
Soft skills, 21st century learning
21st century skills, Online collaborative learning

ABSTRACT

Background: Unemployed graduates have become the cause of anxiety in Malaysia. Even though these graduates have excellent academic skills, this does not guarantee them getting a job; due to the fierceness of competition in the current career market. Academic achievement is not today's primary criteria for getting a job, because most employers are looking for good soft skills as selection criteria for choosing new employees.**Objective:** This study aims to determine the core soft skills that are related to 21st century learning skills, which will be the focus of an Integrated Online Project Base Collaborative Learning model. Several previous study reports, conference proceedings, and journals have been referred to as a literature review, and analysed with the data collected using a matrix table. **Results:**The results show that there are four core domains for 21stcentury learning, based on ISTE, (2000), EnGauge, (2003), Seven Cs, (2006), and P21, (2006) framework. Furthermore, there are collaborations, communications, problem-solving, and critical thinking soft skills. **Conclusion:** This study will continue to focus on these four core skills for the Integrated Online Project Base Collaborative Learning model to be used in the next research level.

© 2014 AENSI Publisher All rights reserved.

To Cite This Article: Sharifah Nadiyah Razali, Hanipah Hussin and Faaizah Shahbodin., 21st Century Core Soft Skills Research Focus for Integrated Online Project Based Collaborative Learning Model. ***J. Appl. Sci. & Agric.,*** *9(11): 63-68, 2014*

INTRODUCTION

Soft skills are particular abilities that can improve employment performance and career prospects. Soft skills were defined by Moss & Tilly (2001) as 'skills, abilities and traits associated with personality, attitude and behaviour, that are different from skills in the form of formal or technical knowledge'. Meanwhile, Hurrell (2009) defined soft skills as 'involving interpersonal and intrapersonal abilities to facilitate the performance of control in certain contexts'. Harvey, Locke and Morey (2004) and Ahmad, Ali and Hamzah (2011) proposed that employability assets consist of knowledge, skills, and attitudes. Most employers are primarily looking for good soft skills over academic achievements, as selection criteria for selecting new employees.Research by Juen, Pang and Vitales (2010), to collect feedback from industries, shows that Malaysian polytechnic students did not meet the levels of competency and working attitudes expected by them. Several interview sessions, which were made with program heads from Politeknik Ibrahim Sultan, PoliteknikMerlimau, PoliteknikTuanku Syed Sirajuddin, Politeknik Kota Kinabalu, and Politeknik Sultan Idris Shah, found that soft skills werethe main factor for why graduates were unemployed(Razali *et al*., 2014). Public opinion often refers to the failure of graduates getting employment as them not having the soft skills required by employers. Soft skills are deemed as being highly attractive in industry. Therefore, the role of Higher Educational Institutions (HEIs) is to provide training to students; with soft skills being in accordance with job demands.

In 21st Century Learning, students use educational technologies to apply knowledge to new situations, to analyse information, to collaborate, to solve problems, and to make decisions(Razali *et al*., 2013). Utilising emerging technologies to provide expanded learning opportunities is critical to the success of future generations. It can improve student's options and choices and help to improve student completion and achievements.Greenhill (2009) listed advantages of 21stCentury Learning Environments, such as:

- Provide infrastructure, human resource and learning materials that will support the 21st century learning environment in order to produce the 21stcentury skills needed.

Corresponding Author: Sharifah Nadiyah Razali, Faculty of Information and Communication Technology, Malaysia Technical University Malacca, Hang Tuah Jaya, 76100, Durian Tunggal, Melaka, Malaysia
E-mail: shnadiyah@yahoo.com

Journal of Applied Science and Agriculture, 9(11) Special 2014, Pages: 63-68

- Provide professional learning communities that's enable educators to collaborate and share best practices in integrating 21stcentury skills into classroom practice.
- Enable students to learn in the real context of the 21stcentury through project-based learning or other applied work.
- Allow equal access to quality learning tools, technologies, and resources.
- Provide 21stcentury architectural and interior designs for group, team, and individual learning.
- Support local and international community's involvement in 21st century learning environment.

A 21st century learning environment differs from previous learning environments. Table 1 shows the differences between past learning environments and a 21st century learning environment.

Table 1: Differences between today's learning environments and the past.

Previous Learning Environments	A 21st Century Learning Environment
Teacher-centred classes	Learner-centred classes, with teachers as facilitators /collaborators
Focused on listening, speaking, reading, and writingskills	Focused on interpersonal, interpersonal and presentational skills
Emphasised on the educator as presenter	Emphasised on the learner as a doer
Used technology as a supplement tool	Integrated technology intoinstructions to enhance learning
Provide same learning environment to all learners	Provide learning environment based on individual needs
Traditional learning environment from textbooks	Personallearning environment that meet real world tasks
Testing to find out what students don't know	Assessing to find out what students can do based on rubric
Learning for school	Learning for life

Many researches have been done by educators and researchers to help practitioners integrate 21st century skills into the learning environment. The following framework was selected for this study:

- Assessment and Teaching of 21stCentury Skills (ATCS) was developed by the University of Melbourne and sponsored by Cisco, Intel and Microsoft in 2009. This project aims to provide definitions of 21stcentury skills and design innovative assessment tasks that can be used in the classroom.
- International Society for Technology in Education (ISTE) framework; revised 21st century skills based on student standards and technology in the 2007 curriculum.
- Partnership for 21st century skills (P21) framework was developed in the United States for K12 education purposes in 2006.
- Seven C's framework proposed by Bernie Trilling in 2006. This framework attains and applies the basic 3Rs (reading, 'riting and 'rithmatic).
- EnGauge framework was introduced by Metiri Group and NCREL in 2003. This framework emphasises more on new contextual skills and knowledge.

From the above frameworks, only P21 and Engauge frameworks focus on the skills needed to improve the quality of teaching and learning (Voogt & Roblin, 2010).

MATERIALS AND METHODS

The aim of this study is to determine the core soft skills related to 21st century learning skills, which will be the focus ofan Integrated Online Project Base Collaborative Learning model.In order to achieve this aim, the study was conducted qualitatively in the form of a document review. Several previous study reports, conference proceedings, and journals have been referred to as a literature review, and analysedwith the data collected using a matrix table (Strauss and Corbin, 1990). According to Sallabas (2013),and Best and Kahn (1998), the document review method is the most appropriate tool to collect information in a qualitative study. Moreover, Onwuegbuzie, Leech, and Collins (2012) believe that the variables relevant to the topic can be identified by conducting a quality review of the literature.According to Stewart (2009), the materials and resources that can be used to carry out the analysis and interpretation, include (i) journals and books, (ii) research literature, and (iii) research papers and scholarly materialreports.

Results:

Current conceptual frameworks for "21st Century Skills" include the ACTS (2009) by Melbourne University, the ISTE framework by the American Association of Colleges and Universities (2007), the Partnership for 21st Century Skills (2006), Seven C's framework (2006), and the EnGauge framework from Metiri/NCREL (2003). The elements of 21st century skills, whichare defined based on the current conceptual framework, are summarized and presented in Table 2.

Journal of Applied Science and Agriculture, 9(11) Special 2014, Pages: 63-68

Table 2: Current conceptual frameworks for "21st Century Skills".

No	Framework	Soft skills element
1	ATCS (2009)	i. Creativity and Innovation ii. Critical Thinking, Problem Solving, and Decision Making iii. Leadership iv. Communication and Collaboration
2	ISTE (2007)	i. Creativity and Innovation ii. Critical Thinking, Problem Solving, and Decision Making iii. Communication and Collaboration
3	P21 (2006)	i. Critical Thinking and Problem Solving ii. Creativity and Innovation iii. Communication and Collaboration
4	7c's (2006)	i. Critical Thinking and Doing ii. Creativity iii. Collaboration iv. Cross-cultural Understanding v. Communication vi. Computing vii. Career and Self-reliance
5	EnGauge (2003)	v. Managing Complexity, Creativity, and Higher Order Thinking vi. Collaboration, Social, and Communication

Based on these frameworks, a matrix table was drawn to analyse the21st century core skills. The resultsof which are illustrated in Table 3.

Table 3: 21st century skill's matrix table.

Skills	ATCS Framework (2009)	ISTE Framework (2007)	P21 Framework (2006)	Seven Cs Framework (2006)	EnGauge Framework (2003)
Critical Thinking	√	√	√	√	√
Problem Solving	√	√	√	√	√
Communication	√	√	√	√	√
Collaboration	√	√	√	√	√
Creativity	√	√	√	√	√
Decision Making	√	√			
Innovation	√	√	√		
Leadership	√				
Social					√

From the table, there are five skills, namely collaboration, communication, problem solving, critical thinking, and creative thinking. However, according toGreenhill (2009),with students, the creative thinking skill comes after collaboration, communication, problem solving, and critical thinking skills. Therefore, this study only focuses on these four core skills (collaboration, communication, problem solving, and critical thinking).

Discussion:

The four core domains for 21stcentury learning are based on ATCS (2009), ISTE, (2007),P21, (2006), Seven Cs, (2006), and EnGauge, (2003) frameworks, coupled with collaboration, communication, problem solving, and critical thinking soft skills. All of the skills needed align with surveys on what employers seek by College Graduates by NACE (2012)and Casner-Lottoand Barrington (2006). These surveys also address collaboration, communication, problem solving, and critical thinking, as being the most wanted skills for college graduates. Based on the P21 skills framework, all four core skills have been summarized in Table 4below.

Conclusion:

The skills that employers demand are changing. Currently, soft skills need to be obtained by graduatesto enhance their prospects of good employment. Research has shown that graduates from Malaysian polytechnicsdo not meet the level of competency and working attitude expected by industries. HEI's need to produce graduates that meet the skills required by employers. Therefore, the development of a soft skills study plan is needed.The four core domainsof 21stcentury learning are based on ACTS (2009), ISTE (2007), P21

Journal of Applied Science and Agriculture, 9(11) Special 2014, Pages: 63-68

(2006), Seven Cs(2006), and EnGauge (2003) frameworks, coupled with collaboration, communication, problem solving, and critical thinking soft skills. Research by Sancho *et al*., (2011)shows that collaborative learning promotes the development of soft skills.

Table 4: Summary of the P21 skills framework. (Source: Greenhill (2009)).

Critical Thinking	Reason effectively
	• Use various types of reasoning (i.e., inductive, deductive, etc.) as appropriate to the situation
	Use systems thinking
	• Analyse how parts of a whole interact with each other to produce overall outcomes in complex systems
Problem Solving	Make judgments and decisions
	• Effectively analyse and evaluate evidence, arguments, claims, and beliefs • Analyse and evaluate major alternative points of view • Synthesize and make connections between information and arguments • Interpret information and draw conclusions based on the best analysis • Reflect critically on learning experiences and processes
	Solve problems
	• Solve different kinds of non-familiar problems in both conventional and innovative ways • Identify and ask significant questions that clarify various points of view and lead to better solutions
Communication	Communicate clearly
	• Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts • Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions • Use communication for a range of purposes (e.g., to inform, instruct, motivate and persuade) • Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact • Communicate effectively in diverse environments (including multi-lingual)
Collaboration	Collaborate with others
	• Demonstrate the ability to work effectively and respectfully with diverse teams • Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal • Assume shared responsibility for collaborative work, and value the individual contributions made by each team member

Collaborative learning, which is a learning approach that leads to the theory of constructivism (Vygotsky, 1978), has been used as a learning strategy worldwide for many years (Ashton-Hay, 2006). According to Johnson, and Johnson (1989), learning tends to be most effective when students are in a position to work collaboratively in expressing their thoughts, discussing and challenging ideas with others, and working together towards a group solution to a given problem. Research has shown that undergraduates improve their academic performance by interacting with their peers (Chen, 2011). Even though the benefits of collaborative learning are widely acknowledged;as previously discussed, graduates still lack the soft skills that are currently demanded by employers.

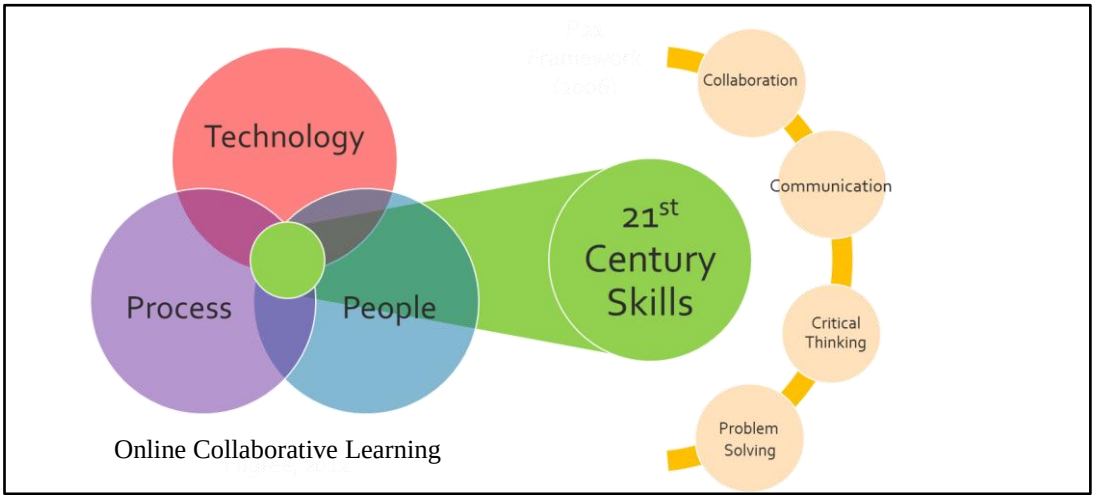

Fig. 1: 21st Century Core Soft Skills Research Focus.

Filigree (2012) claimsthat there are five maturity stages in collaboration.In order to develop an effective online collaborative learning, collaborative learning and an advanced instructional model are fully supported by technology, people and process. Technology is seen as an important enabler for improving student learning outcomes. However, to get the greatest value from technology, best practices are required.Therefore,

Journal of Applied Science and Agriculture, 9(11) Special 2014, Pages: 63-68

collaborative learning and advanced instructional models, which are fully supported by technology, people, and processes are proposed to develop the 21st century skills of: Collaboration, Communication, Critical Thinking and Problem Solving. This study only focuses on these four core skills (i.e., collaboration, communication, critical thinking, and problem solving) for an Integrated Online Project Base Collaborative Learning model.

ACKNOWLEDGEMENT

The author wishes to express her gratitude to her supervisors, Associate Professor Dr. Hanipahbinti Hussin, Assoc. Prof. Dr. Faaizah Shahbodin and Dr. Norasikenbinti Bakar, who were abundantly helpful and offered invaluable assistance, support and guidance. The author would also like to thank the management, lecturers, and students of the various polytechnics for their involvement, cooperation, and support in this study. Last but not least, the author would like to express an infinite love to her beloved husband, family, and colleagues for giving much support and encouragement.This research was done by a PhD candidate from UTeM.

REFERENCES

Ahmad, S., N. Ali, M.F. Hamzah, 2011. Kebolehpasaran Graduan UKM: Satu Kajian Perbandingan Antara Graduan Disiplin Sains dengan Bukan Sains. *Jurnal Personalia Pelajar, 14:* 81-90.

Ashton-Hay, S., 2006. Constructivism and powerful learning environments: create your own! In *9th International English Language Teaching Convention*.

Best, J.W., J.V. Kahn, 1998. *Research In Eduction*. United State of America: A Viacom Company.

Casner-Lotto, J., L. Barrington, 2006. *Are they really ready to work?: Employers' perspectives on the basic knowledge and applied skills of new entrants to the 21st century U.S. workforce*. United States: Conference Board : Partnership for 21st Century Skills : Corporate Voices for Working Families : Society for Human Resource Management.

Chen, Y., 2011. Learning styles and adopting Facebook technology. In *Technology Management in the Energy Smart World (PICMET)* (pp: 1-9).

Filigree, C., 2012. *Instructional Technology and Collaborative Learning Best Practices : Global Report and Recommendations*.

Greenhill, V., 2009. *21 st Century Learning Environments*.

Harvey, L., W. Locke, A. Morey, 2004. *Enhancing employability, recognising diversity*. *Unpublished doctoral dissertation*. Retrieved from http://heer.qaa.ac.uk/SearchForSummaries/Summaries/Pages/GLM24.aspx

Hurrell, S.A., 2009. *Soft skills deficits in Scotland : their patterns, determinants and employer responses*.

Johnson, D.W., R.T. Johnson, 1989. *Cooperation and competition: Theory and research.* Edina, MN: Interaction Book Company.

Juen, J.W.Y., V. Pang, J.W. Vitales, 2010. OBE Curriculum Implementation Process in Politeknik Kota Kinabalu: A Possible Evaluation Framework. In *Prosiding Seminar Transformasi Pendidikan Teknikal* (pp: 172-181).

Moss, P., C. Tilly, 2001. *Stories Employers Tell. Race, SKills and Hiring in America*. New York: Russel Sage Foundation.

NACE, 2012. Job Outlook: The Candidate Skills/Qualities Employers Want. Retrieved from http://www.naceweb.org/surveys/job-outlook.aspx.

Onwuegbuzie, A., N. Leech, K. Collins, 2012. Qualitative Analysis Techniques for the Review of the Literature. *Qualitative Report, 17:* 1-28. Retrieved from http://files.eric.ed.gov/fulltext/EJ981457.pdf

Razali, S.N., F. Shahbodin, N. Bakar, H. Hussin, M.H. Ahmad, 2014. Perceptions towards the Usage of Collaborative Learning in Teaching and Learning Processes at. In *International Conference on Advances in Computing, Communication and Information Technology*.

Razali, S., F. Shahbodin, N. Bakar, H. Hussin, M.H. Ahmad, N. Sulaiman, 2013. Incorporating Learning Management System with Social Network Sites to Support Online Collaborative Learning: Preliminary Analysis. *Advances in Visual …*, 549-557. Retrieved from http://link.springer.com/chapter/10.1007/978-3-319-02958-0_50.

Sallabas, M.E., 2013. Analysis of narrative texts in secondary school textbooks in terms of values education. *Educational Research and Reviews*, *8*(8): 361-366. doi:10.5897/ERR12.190.

Sancho, P., J. Torrente, E.J. Marchiori, B. Fernández-Manjón, 2011. Enhancing moodle to support problem based learning. The Nucleo experience. In *IEEE Global Engineering Education Conference (EDUCON)* (pp: 1177-1182).

Stewart, A.M., 2009. *Research Guide for A Students and Teachers*.

Strauss, A., J. Corbin, 1990. *Basics of qualitative research: Grounded theory procedures and techniques*. Newburry Park: CA: Sage.

Journal of Applied Science and Agriculture, 9(11) Special 2014, Pages: 63-68

Voogt, J., N.P. Roblin, 2010. *21st Century Skills - Discussion Paper*.
Vygotsky, L.S., 1978. *Mind in Society*. Cambridge (Massachusetts): Harvard University Press.