

New Way to Learn, New Way to Success: Transforming a Brain-Based Library Via Active Learning Instructions

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NEW WAY TO LEARN, NEW WAY TO SUCCESS: TRANSFORMING A BRAIN-BASED LIBRARY VIA ACTIVE LEARNING INSTRUCTIONS

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Abstract

The practice of active learning in library instructions can be traced back to the 90s and is seen to have exponentially expanded with the rapid advancement of technology. As opposed to the traditional lecture-based bibliographic instructions, engaging students in the learning process has become more and more indispensable in the current world.

The concept of brain-based library can be used to further enhance active learning environment in a library instruction. The presentation intends to relate active learning to the changing pattern of information access, which is crucial in dealing with the digital natives that become the patrons of today's libraries. Thus general findings from brain researches will be highlighted to associate with active learning instructions towards the transformation of brain-based libraries in developing future minds.

The presentation also aims to showcase what has been implemented in a Malaysian library context of active learning. Though not fully embracing the ideals of active learning, it can be observed that some methods of active learning have been employed in conducting library instructions, or locally commonly known as user education programmes.

Keywords: brain-based learning, active learning, library instruction

INTRODUCTION

Active learning

Active learning has been recognized as an influential method of teaching. Researches and studies have indicated the impact of active learning strategies on students learning behavior and how these strategies have been found to create excitement in a learning environment as well as instigating critical thinking prowess among students (Bonwell, Eison, & Education, 1991; Dabbour, 1997; Michael, 2006; Walker, 2003).

Greenwood defines active learning as "The process of having students engage in some activity that forces them to reflect upon ideas and how they are using those ideas". It also means "requiring students to regularly assess their own degree of understanding and skill at handling concepts or problems in a particular discipline, [or] the attainment of knowledge by participating or contributing, [or] the process of keeping students mentally, and often physically, active in their learning through activities that involve them in gathering information, thinking and problem solving."(Collins & O'Brien, 2003)

Richard Hake, a professor of physics at Indiana University was more favourable of the term "interactive engagement," and stressed that IE methods are "designed in part to promote conceptual understanding through interactive engagement of students in heads-on (always) and hands-on (usually) activities which yield immediate feedback through discussion with peers and/or instructors."

Active learning is essentially encouraged in the Seven Principles for Good Practice in Undergraduate Education as compiled in a study supported by the American Association of Higher Education (Chickering & Gamson, 1991).

Some characteristics of active learning can be outlined as follows: (Dabbour, 1997; Snyder, 2003)

1. Greater emphasis on developing analytical and critical thinking skills
2. Engaging students on activities other than simple passive listening
3. Emphasis on exploring attitudes and values held about course material
4. Focus on higher thinking (critical thinking, analysis, evaluation) rather than knowledge gathering
5. Faster transfer of feedback between both students and instructors.
6. Less emphasis on information transmission and more on skill development
7. Greater emphasis on students' exploration of their attitudes and values.

In their book *Active Teaching and Learning Strategies: Creating a Blueprint for Success*, Rock and Michelle Moore identified four main components in conducting an active learning environment for students (Moore & Moore, 2004):

1. Clear communication of what will be taught – specific content, clear and accurate directions, use of performance based rubric
2. Obtaining and maintaining student engagement – by varying the delivery methods, identifying barriers to learning, utilizing social and collaborative strategies, and continually providing sufficient opportunities for practice
3. Monitoring student progress – regular reviewing of tasks performed by students, customizing learning targets to specific student needs, and modifying instruction to maximize learning
4. Immediate feedback – promoting contextual learning strategies, use of positive reinforcement and continual refinement for improvement. This will in return instill student motivation and self-efficacy for learning.

Librarians have been implementing active learning in their library instructions due to the greater impact it has shown on library users as reflected in their information seeking behaviour and academic performance.

Nevertheless, with the changing pattern of information access in the 21st century, it is crucial for current and future librarians to address to the changing needs of library patrons who are now consisting more of digital natives. Although there are debates and arguments about the characteristics of digital natives in relation to learning (Bennett, 2008), there is a general consensus that this generation is highly exposed to technology which may have changed their information seeking behavior as well as their approach to learning.

The more digitally adept library users nowadays have been accustomed with the plethora of information that they received since early of their lives, thus librarians must be creative in disseminating library instructions to them. In developing future minds of the library patrons, librarians should look into ways of how brain-based learning strategies can be a more effective method in library instruction programmes (Zalina, 2010).

Brain-based learning

Brain-based library in this study will be based on the principle of brain based learning (BBL). Problem based learning (PBL) as well is related to the same root as BBL.

BBL is defined as a learning approach that is aligned with how the brain naturally learns best. "Brain-based learning is a way of thinking about the learning process. It is a set of principles; and a base of knowledge and skills upon which we can make better decisions about the learning process" (Jensen, 2000)

The Caines developed their 12 principles for brain-based learning in 1989 and have customized and developed them over the years. They recommend the following 12 principles for brain-based learning: (Caine & Caine, 1991)

1. The brain is a parallel processor. The brain ceaselessly performs many functions simultaneously. Thoughts, emotions, imagination, and predispositions operate concurrently and interact with other brain processes involving health maintenance and the expansion of knowledge.
2. Learning engages the entire physiology. The brain functions according to physiological rules. Learning is as natural as breathing, and it is possible to either inhibit or facilitate it. In fact, the actual "wiring" of the brain is affected by our life and educational experiences.
3. The search for meaning is innate. The search for meaning (making sense of our experiences) is survival-oriented and basic to the human brain. The brain needs and automatically registers the familiar while simultaneously searching for and responding to novel stimuli.
4. The search for meaning occurs through "patterning." In a way, the brain is both scientist and artist, attempting to discern and understand patterns as they occur and giving expression to unique and creative patterns of its own. The brain resists having meaninglessness imposed on it.
5. Emotions are critical to patterning. What we learn is influenced and organized by emotions and mindsets involving expectancy, personal biases and prejudices, self-esteem, and the need for social interaction. Emotions and thoughts literally shape each other and cannot be separated.
6. Every brain simultaneously perceives and creates parts and wholes. Although there is some truth to the "left-brain, right-brain" distinction, that is not the whole story. In a healthy person both hemispheres interact in every activity, from art and computing to sales and accounting. The "two-brain" doctrine is most useful for reminding us that the brain reduces information into parts and perceives holistically at the same time.
7. Learning involves both focused attention and peripheral perception. The brain absorbs information of which it is directly aware, but it also absorbs information that lies beyond the immediate focus of attention. In fact, the brain responds to the entire sensory context in which teaching and communication occur. These "peripheral signals" are extremely potent.
8. Learning always involves conscious and unconscious processes. Much of our learning is the result of unconscious processing. Moreover, it is the entire experience that is processed. That means that much understanding may NOT occur during a class, but may occur hours, weeks, or months later.
9. We have (at least) two types of memory systems: spatial and rote learning. Our natural spatial/autobiographical memory system registers everything -- down to the details of your meal last night. It is always engaged, is inexhaustible, and is motivated by novelty. We also have a set of systems for rote learning, or recalling relatively unrelated information. These systems are motivated by reward and punishment. Thus, meaningful and meaningless information are organized and stored differently.
10. The brain understands and remembers best when facts and skills are embedded in natural spatial memory. Our native language is learned through multiple, interactive experiences. It is shaped by internal processes and by social interaction.
11. Learning is enhanced by challenge and inhibited by threat. The brain learns optimally -- makes maximum connections -- when appropriately challenged. But the brain "downshifts" -- becomes less flexible and reverts to primitive attitudes and procedures -- under perceived threat.
12. Every brain is unique. We all have the same set of systems, and yet we are all different.

Caine and Caine said that "Optimizing the use of the human brain means using the brain's infinite capacity to make connections -- and understanding what conditions maximize this process." They identify three interactive and mutually supportive elements that should be present in order for complex learning to occur: (Chipongian, 2006)

1. Relaxed alertness - An optimal state of mind that we call relaxed alertness, consisting of low threat and high challenge

2. Orchestrated immersion - The orchestrated immersion of the learner in multiple, complex, authentic experience.
3. Active processing - The regular, active processing of experience as the basis for making meaning.

According to Lackney, based on a workshop facilitated by Randall Fielding, there are 12 design principles based on brain-based learning research:(Lackney, 1998)

1. Rich-simulating environments – colour, texture, "teaching architecture", displays created by students (not teacher) so students have connection and ownership of the product.
2. Places for group learning – breakout spaces, alcoves, table groupings to facilitate social learning and stimulate the social brain; turning breakout spaces into living rooms for conversation.
3. Linking indoor and outdoor places – movement, engaging the motor cortex linked to the cerebral cortex, for oxygenation.
4. Corridors and public places containing symbols of the school community's larger purpose to provide coherency and meaning that increases motivation (warning: go beyond slogans).
5. Safe places – reduce threat, especially in urban settings.
6. Variety of places – provide a variety of places of different shapes, colour, light, nooks & crannies.
7. Changing displays – changing the environment, interacting with the environment stimulates brain development. Provide display areas that allow for stage set type constructions to further push the envelope with regard to environmental change.
8. Have all resources available – provide educational, physical and the variety of settings in close proximity to encourage rapid development of ideas generated in a learning episode. This is an argument for wet areas/ science, computer-rich workspaces all integrated and not segregated. Multiple functions and cross-fertilization of ideas are primary goal.
9. Flexibility – a common principle in the past continues to be relevant. Many dimensions of flexibility of place are reflected in other principles.
10. Active/passive places – students need places for reflection and retreat away from others for intrapersonal intelligence as well as places for active engagement for interpersonal intelligence.
11. Personalized space – the concept of home base needs to be emphasized more than the metal locker or the desk; this speaks to the principle of uniqueness; the need to allow learners to express their self-identity, personalize their special places, and places to express territorial behaviours.
12. The community-at-large as the optimal learning environment – need to find ways to fully utilize all urban and natural environments as the primary learning setting, the school as the fortress of learning needs to be challenged and conceptualized more as a resource rich learning centre that supplements life-long learning. Technology, distance learning, community and business partnerships, home-based learning, all need to be explored as alternative organizational structures for educational institutions of the present and future.

The principles of BBL by Caines together with the design principles based on BBL by Lackney reveal how brain based learning can be useful to the learning-teaching process.

GENERAL RESEARCH FINDINGS

A considerable amount of literature has been published on the brain research related to learning. McParland, M (2004), found that Problem Based Learning (PBL) curriculum was more effective in helping students to learn and that this applied to both clinical performance and knowledge base. This is encouraging, as it shows that the acquisition of knowledge need not be a casualty of curriculum reform. Consistent with previous research, academic success was

related to the use of strategic and deep learning styles. It is possible that PBL improved students' ability to learn during the teaching sessions, but did not lead to a change in students' preferred approach to learning outside the sessions. In summary, the findings indicate that the PBL course was more successful in terms of students' academic performance than the traditional course, and this suggests that the change to a PBL course is worthwhile. (McParland, Noble, & Livingston, 2004)

A study done by Ali, Riasat (2010) on the impact of brain based learning on students' academic achievement. The major purpose of the study was to see the impact and effectiveness of brain based learning environment in secondary schools. Samples was divided in two groups, Experimental group and Controlled group; each group having 25 students. Experimental group was taught by brain based learning while controlled group by traditional method for data collection. It was revealed from the study that brain based learning environment has positive impact on students' academic achievement. Analysis and results of the study showed that brain based learning environment was found to be effective in learning. The students of brain based learning method showed better results than traditional method of teaching. So brain based learning method and its environments are fruitful in the academic achievement of students. (Ali, Ghazi, Shahzad, & Khan, 2010)

Awolola, S.A (2011), performed a similar series of experiments in the 2011 to show the effect of brain-based learning strategy on students' achievement in senior secondary school mathematics in Oyo State, Nigeria. The study adopted a pretest-posttest, non-equivalent control group design in a quasi-experimental setting. This design was preferred because the experimental and control groups were naturally assembled groups as intact classes with similar characteristics. The experimental group was taught mathematics using the Brain-Based Learning Strategy (BBLs). The control group was taught the same concepts in mathematics using the pre-planned lesson to the students with or without the use of instructional aids. These results showed that brain-based instructional strategy enhanced students' achievement in Mathematics better than the conventional method. Findings showed that there was significant interaction effect of treatment and cognitive style on students' achievement in mathematics. The relative effectiveness of the brain-based learning strategy over the conventional method could be due to the fact that brain-based learning strategy is a learner-centered instructional strategy which provides learners with the opportunity for creating learning environments that fully immersed learners in an educational experience. (Awolola, 2011)

OBJECTIVE

The purpose of this study is:

- a) To understand the existing practice of teaching library instructions in academic libraries in Malaysia
- b) To evaluate the integration of active learning strategies in library instruction classes
- c) To investigate librarians' understanding of brain-based learning in library instructions

METHODS

A quantitative research design is used in this research. A dichotomous and likert scale of 1 to 5 is used in the questionnaire. The questionnaires were sent to librarians in academic libraries including private colleges in Malaysia. 20 libraries participated in the questionnaire. The responses were received from each institution with 46 respondents. It is expedient to say that the sampling is well represented by all academic institutions.

In general, the questionnaire is about the implementation of active learning during library instructions class, and the implementation of brain based learning while conducting the class. Questions were also posed to know the level of awareness and understanding of active learning and brain-based learning concepts among the targeted respondents.

FINDINGS OF SURVEY

The findings of the survey are sub-sectioned accordingly in order to ensure a more structured approach. It is important to establish a consensual understanding to the term 'library instruction' among Malaysian academic librarians. The more widely used term in Malaysia to denote the trainings to the library patrons about the use of library and its resources and services is user education programmes. From the survey, 60% of the respondents agreed that the term 'library instruction' is similar to the term 'user education programmes' held in Malaysian libraries.

The first section of the survey is to understand the current practice of library instructions in Malaysian academic libraries. The survey depicted 70% of the respondents have 1 to 5 years of experience in conducting user education programmes. It is also gathered from the survey that 89% of the respondents follow specific syllabus or modules for their user education programmes. Only 46% of academic libraries in Malaysia have made the classes compulsory to the students or users, whereas the rest offers optional classes to the users.

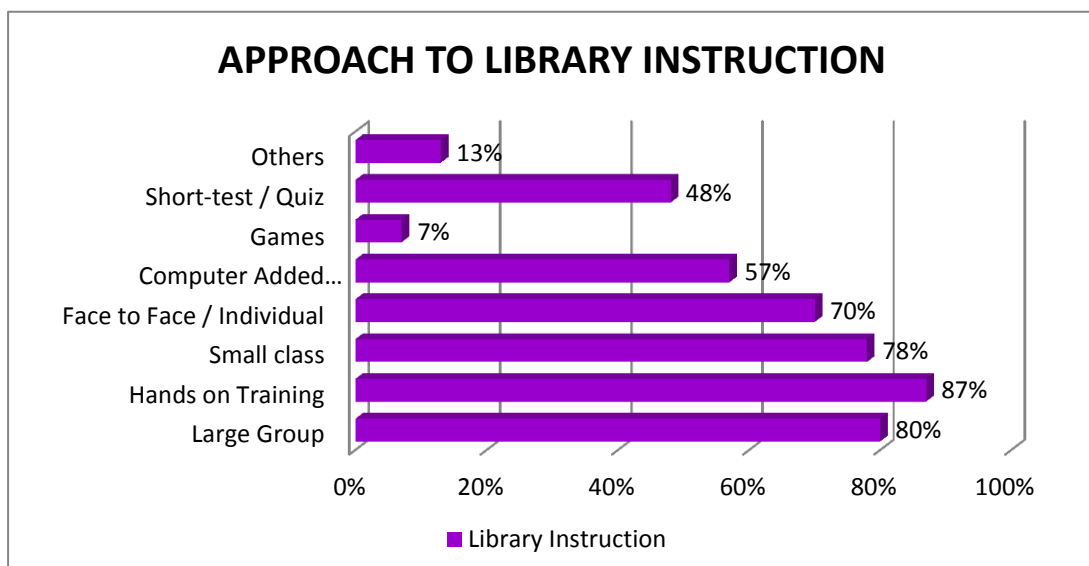


Figure 1 : Types of library instructions organized by academic library in Malaysia

The findings of the questionnaire also revealed several types of library instructions organized by academic libraries in Malaysia. The most widely used approach in conducting library instruction is hands-on training (87%) and the least used is games (7%).

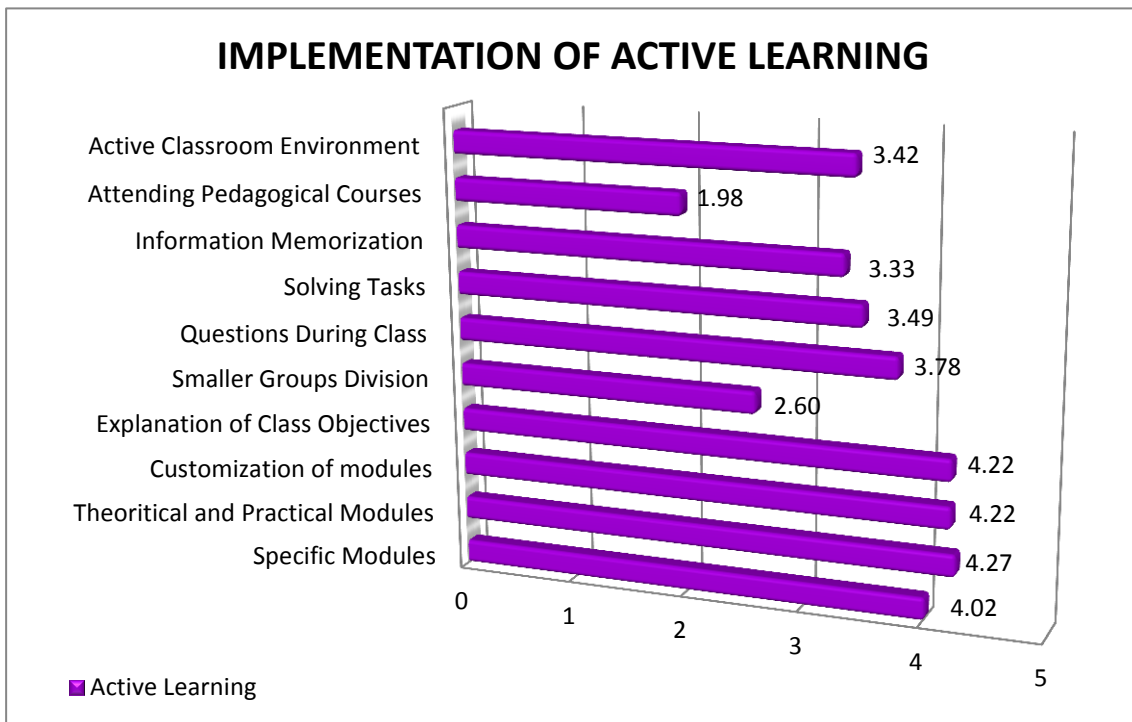


Figure 2 : Implementation of active learning by Malaysian academic librarians

The result from this section indicates a high usage of active learning approach in library instructions in Malaysian academic libraries. From ten elements of active learning being studied, only 2 were found to be seldomly being practices; i.e. librarians involved in library instructions rarely attend courses on educational and pedagogical techniques and they seldom divide students into pairs or smaller groups during library instruction classes.

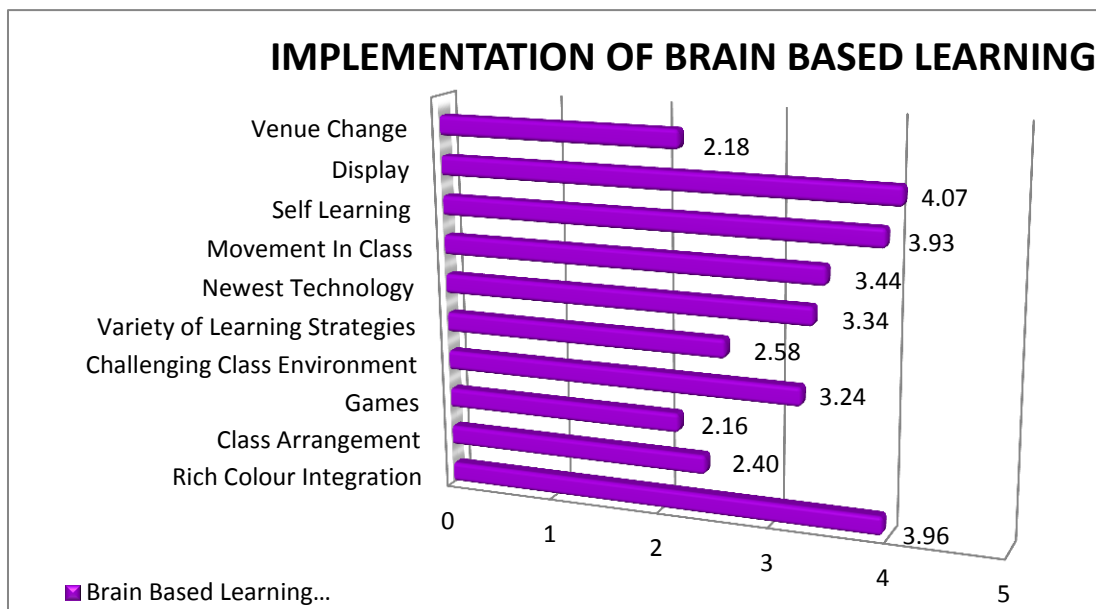


Figure 3 : Implementation of brain based learning by Malaysian academic librarians

Questions in this section are made to focus on integration of brain-based learning concepts into library instructions. It can be observed that Malaysian librarians have greater tendency to use brain-based learning concepts in their library instruction classes. The most widely used brain-

based learning concept is relevant display of materials which has the average rate of 4.07. Other concepts rated as occasionally being used include usage of rich colour in presentation tools (3.96), providing regular motivation for self-learning among students (3.93), encouraging movements during class (3.44) and using latest technology in class to facilitated learning (3.34).

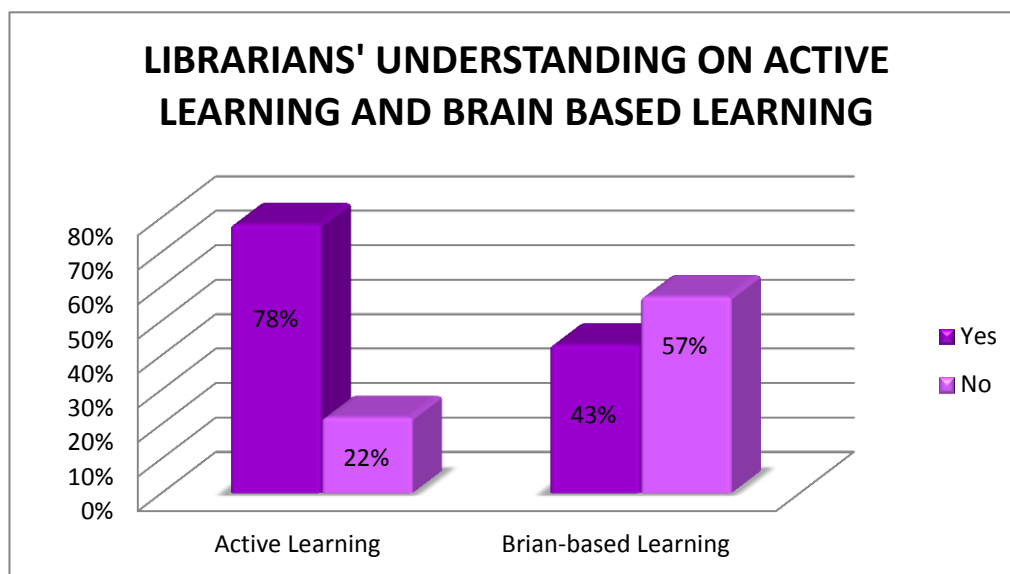


Figure 4 : The comparison of awareness about active learning and brain based learning among Malaysian academic librarians

The study also measured the awareness of Malaysian academic librarians about active learning and brain based learning. The figure above showed that majority of the respondents (78%) heard and know about active learning, but only 43% heard and know about brain based learning.

When asked whether the librarians have been implementing active learning concept in their library instruction classes, 53 % of them agreed. However, only 27% of the respondents agreed that they have been implementing brain-based learning concepts in their library instruction classes. It is imperative to assert that despite the low perception by librarians about the usage of brain-based learning concepts in their classes, the data in Figure 3 has shown eminent use of brain-based learning elements in their library instruction classes.

CONCLUSION

The survey showed that there is an indication of Malaysian academic librarians implementing active learning while conducting library instructions, which can be seen from several methods of active learning approach being used in their respective user education programmes. Some of the design principles based on brain based learning are also being implemented in library instruction classes. Unfortunately, it must be agreed that awareness of and knowledge on BBL is still low compared to active learning which is widely accepted and practiced by Malaysian academic librarians.

Several potential solutions are suggested to ensure that brain-based learning concepts are well integrated in library instructions thus becoming a part of a holistic transformation towards a brain-based library. These solutions include the following:

1. Librarians must be trained to integrate brain-based learning concept in their user education programmes
2. Recognition for librarians who play the role of educationalist to encourage holistic transformation of brain-based library

3. Forming special interest group (SIG) for librarians involved in user education programmes with main discussion on how to implement brain-based strategies during class in order to ensure an active learning environment. Example, online forums for members and suggestion to the national librarian association to initiate the SIG for BBL.

In another note, librarians should be aware of the changes that are taking place in terms of information literacy and support the current philosophy of learning in order to tailor the library instructions to suit the tech savvy library users. As a strategic response to these demands, librarians should reflect on three major points as construed by Joint (2011) which include creating a progressive space in the library or developing a hybrid library that provides collaborative space as well as the traditional study place, maintaining the provision of systematic information literacy which is still relevant but with a twist that appeal to the Net generation, and finally pursuing a blended approach to library collection management.

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