A Multiple Intelligences Supported Web-based Collaborative Learning Model Using Stufflebeam's CIPP Evaluation Model

Monchai Tiantong
Department of Computer Education
Faculty of Technical Education
King Mongkut's University of Technology North Bangkok
1518 Pracharat 1 Road, Bangsue, Bangkok 10800, Thailand

Pramote Tongchin
Faculty of Science and Technology
Petchaburi Rajabhat University
38 Hardjaosumran Road, Muang, Petchaburi 76000, Thailand

Abstract

The development of web-based collaborative learning is one of the most expanding areas of education and training in the era of information and communication technology, because it enables students to have diverse experiences at any time and any place, to communicate with each other via e-mail, chat, and instant messenger, to improve their knowledge and skills with synchronous and asynchronous tools. However, web-based collaborative learning do not guarantee the quality and is not appropriate for all, because students have different level of intelligence. It makes sense to address as many of these intelligence level as possible in the classrooms and in lesson plans. All students want to frame their work in the best possible light and learn in the way that will stick. Empowering students to learn through multiple modalities fosters a collaborative classroom where students are comfortable experimenting and letting others experiment. This study introduces a multiple intelligences supported web-based collaborative learning model using Stufflebeam's CIPP evaluation model, that employed mixed innovations consisting the web-based learning, the collaborative learning technique and the Stufflebeam's CIPP evaluation model. The model was synthesized by using ten experts and evaluated by five experts. In conclusion, this can be used the synthesized model to complete the web-based collaborative learning lesson successfully.

Keyword: multiple intelligence (MI), context-input-process-product evaluation model (CIPP), student team achievement divisions (STAD)

Introduction

Collaborative learning seems to be a teaching or learning innovation whose time has come, it puts into practice the major conclusions from modern cognitive theory, particularly that students must be actively engaged in building their own minds, and it is a student-centered approach that allows students to maximize learning performance. The interactions among students drive learning outcomes in collaborative learning and provide opportunities for students to reflect and express their learning and thinking (Puntambekar, 1999), during the collaborative learning process, students can share their learning materials and support each other to achieve common learning goals (Johnson & Johnson, 2008). According to Gerlach, "Collaborative learning is based on the idea that learning is a naturally social act in which the participants talk among themselves, it is through the talk that learning occurs" (Gerlach, 1994). In the collaborative learning environment, the students are challenged both socially and emotionally as they listen to different perspectives, and are required to articulate and defend their ideas. In so doing, the students begin to create their own unique conceptual frameworks and not rely solely on an expert's or a text's framework.

Thus, in a collaborative learning setting, students have the opportunity to converse with peers, present and defend ideas, exchange diverse beliefs, question other conceptual frameworks, and be actively engaged, moreover it is an active process whereby students assimilate the information and relate this new knowledge to a framework of prior knowledge, and learning requires a challenge that opens the door for the student to actively engage his/her peers, and to process and synthesize information rather than simply memorize and regurgitate it (MacGregor, 1990).

Meanwhile, information and communication technology, effects of the continuing developments in information technology particularly in education. The pace of change brought about by new technologies has had a significant effect on the way people live, work, and play worldwide. New and emerging technologies challenge the traditional process of teaching and learning, and the way education is managed. Information and communication technology, while an important area of study in its own right, is having a major impact across all curriculum areas. Easy worldwide communication provides instant access to a vast array of data, challenging assimilation and assessment skills. Rapid communication, plus increased access to information technology in the home, at work, and in educational establishments, could mean that learning becomes a truly lifelong activity, an activity in which the pace of technological change forces constant evaluation of the learning process itself (Wang, 2008). According to significant of information and communication technology in education, now information technology has made it easy to study as well as teach in groups. With online we can be unite together to do the desired task. Efficient postal systems, the mobile phone, and various recording and playback systems based on computer technology all have a part to play in educational broadcasting in the new millennium.

The internet and its websites are now familiar to many student in developed countries and among educational elites elsewhere, but it remains of little significance to very many more, who lack the most basic means for subsistence, and information technology aids plenty of resources to enhance the teaching skills and learning ability. With the help of information and communication technology now it is easy to provide audio visual education. The learning resources are being widens and widen. Now with this vivid and vast technique as part of the information and communication technology curriculum, students are encouraged to regard computers as tools to be used in all aspects of their studies. In particular, they need to make use of the new multimedia technologies to communicate ideas, describe projects, and order information in their work (IICD, 2008). Advancements in information and communication technology have not only benefited education, but also continue to shape the way the field itself develops. With more powerful software and applications, along with mobile devices such as tablet computers, personal digital assistants and laptops becoming more prevalent in the classroom, information technology offers many benefits to all aspects of education.

With the development of information and communication technology, collaborative learning has expanded to the web environment, which helps communication overcome the constraints of time and space. Accordingly, Zhao Jianhua and Kanji Akahori defined web-based collaborative learning as an instructional method designed to accomplish group goals through interactions with web technology, and will become a popular learning approach in higher education field along with the development of web-based environment. Web-based collaborative learning can be effectively used to facilitate students' learning performance and to enhance their competence of creativity. Life-long learning, distance learning and informal learning are the main three areas to utilize web-based collaborative learning approach. Even in the classroom-based environment, and web-based collaborative learning also can be integrated together with the traditional classroom-based learning process (Jianhua & Akahori, 2001). In conclusion, web-based collaborative learning is a potential tool to support collaborative learning that is being used to support teachers and enrich their teaching performance, moreover it is a successful and frequently adopted method for the learner and their colleagues to cooperate effectively and share in the learning experience (Liaw, 2004).

According to the student-centered approach, it can be applied with learning theory in teaching. The learning theory describes that students learn from one another. The examples of learning theory are collaborative learning techniques, and multiple intelligences theories. The idea of collaborative learning and working together to exchange ideas is considered an important method to obtain knowledge. Students can develop the type of intellectual exchange that fosters creative thinking and productive problem-solving. Howard Gardner's multiple intelligences theory can be used in any topics of subject in both basic and higher education. Teachers are better able to accommodate students' learning needs by incorporating multiple intelligences in the elementary classroom. Students are also more engaged in their learning through multiple intelligences activities.

A multiple intelligence classroom also leads students to greater student achievement. One benefit of multiple intelligence is that it helps teachers accommodate their students' learning needs, which in turn allows teachers to cater instruction for the academic needs, intelligence strengths, and weaknesses of their students. Gardner believed once individuals identify their intelligence strengths, they can "draw upon this knowledge to enhance that person's educational opportunities and options" (Gardner, 1983). This also better accommodates students' learning needs (Nicholson-Nelson, 1998). The learning method that works best for one student may not work for another due to their differing intelligence strengths. Therefore, if a teacher uses Gardner's multiple entries approach to target several intelligences in one lesson, students will get more exposure to the content and more students will be reached (Gardner, 2006; Heacox, 2002).

In term of Stufflebeam's CIPP evaluation model, one very useful approach to educational evaluation is known as the CIPP, or Context, Input, Process, Product approach. Basically, the CIPP evaluation model requires that a series of questions be asked about the four different elements of the model on context, input, process, and product. This provides a systematic way of looking at many different aspects of the curriculum development process. There is a risk, however, that it may be directed only by experts, and for this reason it is vital to identify ways in which various stakeholders can be meaningfully involved (Stufflebeam et al, 2000). In education settings, the CIPP evaluation model has been used to evaluate numerous educational projects and entities. For example, Joseph Felix adopted the CIPP evaluation model to evaluate and improve instruction in Cincinnati, Ohio, school systems (Felix, 1979), similarly, Tom Nicholson recommended the CIPP evaluation model to evaluate reading instruction (Nicholson, 1998), similarly Jan Matthews and Alan Hudson developed guidelines for the evaluation of parent training projects within the framework of the CIPP evaluation model (Matthews & Hudson, 2001).

According to a study of David Williams entitled "A framework for evaluating web-based instruction", he propose and illustrate a framework for improving evaluations of instruction offered via the internet based on Stufflebeam's CIPP evaluation model. Examples of evaluations of several instructional development projects at a major university will clarify the framework's utility (William, 1999), meanwhile, a study of Gwendolyn Smith et al. entitled "Assessing the pedagogical and technological quality of online courses", that used the CIPP evaluation model for this study. This paper describes the development and implementation of an evaluation system applied to newly created masters level online programs at a major metropolitan research university. A systematic approach to evaluation provided formative feedback on the processes and products of course development. Instructional design plans, statements of work, and course syllabi were synthesized with data gleaned from interviews with instructors and designers, and with instructor and student surveys. A comprehensive system for evaluating, verifying, and contrasting inferences related to pedagogical and technological qualities is presented through the lens of a case study of a newly developed and delivered online course (Smith et al, 2004). These papers revealed the Stufflebeam's CIPP evaluation model for the web-based collaborative learning can be used successfully.

Therefore, this study employed mixed innovations to synthesize the multiple intelligences supported web-based collaborative learning model combined with Stufflebeam's CIPP evaluation model by using focus group discussion from ten experts, who graduated with a doctorate degree in the area of information and communication technology or computer education or educational research. The synthesized model of this study can be used as the model to create web-based collaborative learning for learning via internet.

Review of related literatures

1. Collaborative learning

Collaborative learning is an educational approach to teaching and learning that involves groups of learners working together to solve a problem, complete a task, or create a product. Theory of the collaborative teaching can be derived from Piaget's constructivism and growing social constructivism Vygotsk's socio-cultural theories, and situated cognition. Teacher collaboration requires a dynamic involvement of individuals working together to construct knowledge. Knowledge construction occurs through social and intellectual interaction with peers and experts (Wang, Hinn & Kanfer, 2001). Teacher collaboration is oriented towards designing the syllabus, carrying out common teaching activities and so on. In some situations, collaboration may consist of a teacher offering his/her peers a well-tested teaching module and assisting them in carrying out related classroom activity. In collaborative teaching, the distinction between power over others and power with others is useful.

While teachers will always have some form of power not held by students, this power can be used to shape the collective experience in a way that empowers everyone that enhances power with others, that is, collaboration (Richards, Elliot, Woloshyn & Mitchell 2001). Other types of collaboration include: collaboration between teachers and experts, collaboration between students and teachers, collaboration between students, collaboration between students, teachers and experts (Trentin, 1999).

Some of the advantages of collaborative teaching are as follows: it results in considerable individual growth and communities learn through collaborative activities (Resta, 2002). With respect to collaboration, it is possible to promote learning methods that have so far been often ignored in the school system: group work, background research, enquiring, experience sharing, cultural exchange, and collaboration towards common educational goals. Collaboratively teaching students with and without disabilities, similarly, Paul Gerber and Patricia Popp's study showed that the students without disabilities liked the collaborative teaching model. They felt positive effects on grades and self-esteem (Gerber & Popp, 1999). Moreover, students without disabilities hoped for the persistence of the program in following years. According to Renee Lehr, at least four important perceptions of collaborative teaching might substantially improve administrative policies, and better support its success: voluntary involvement helps professional growth; sufficient planning time is crucial; effective collaboration requires training; and collaboration thrives on high visibility (Lehr, 1999).

In term of student team achievement divisions (STAD), stands for student team achievement divisions, it is a collaborative learning strategy in which small groups of learners with different levels of ability work together to accomplish a shared learning goal. It was devised by Robert Slavin and his associates at Johns Hopkins University (Innovative Learning, 2009), students are assigned to four or five member learning teams that are mixed in performance level, gender, and ethnicity. The teacher presents a lesson, and then students work together within their teams to make sure that all team members have mastered the lesson. Finally, all students take individual quizzes on the material, at which time they may not help one another. Students' quiz scores are compared to their own past averages, and points are awarded on the basis of the degree to which students meet or exceed their own earlier performance. These points are then summed to form team scores, and teams that meet certain criteria may earn certificates or other rewards. In a related method called Teams-Games-Tournaments (TGT), students play games with members of other teams to add points to their team scores. STAD and TGT have been used in a wide variety of subjects, from mathematics to language arts to social studies, and have been used from second grade through college. The STAD method is most appropriate for teaching well-defined objectives with single right answers, such as mathematical computations and applications, language usage and mechanics, geography and map skills, and science facts and concepts. However, it can easily be adapted for use with less well-defined objectives by incorporating more open-ended assessments, such as essays or performances (Adesoji & Ibraheem, 2009).

2. Multiple intelligence (MI)

The theory of multiple intelligences was proposed by Howard Gardner in his 1983 book "Frames of Mind", the theory of multiple intelligences as a model of intelligence that differentiates intelligence into specific modalities, rather than seeing it as dominated by a single general ability. Gardner's multiple intelligence concept is a psychological theory that addresses what the brain does with information. It defines intelligence as the capacity to solve problems or fashion products that are of value. It states that there are nine different ways to demonstrate as follows: 1) kinesthetic intelligence, 2) existential intelligence, 3) interpersonal intelligence, 4) intrapersonal intelligence, 5) linguistic intelligence, 6) logical and mathematic intelligence, 7) musical intelligence, 8) naturalistic intelligence, and 9) spatial intelligence. These intelligences with each having its own unique characteristics, tools, and processes that represent a different way of thinking, solving problems, and learning. Its use in the classroom has been significant (Campbell & Campbell, 1996), but its application to project-based learning is still undergoing research. Therefore, once understanding the strength and weakness of their learners, the instructors can help them meet with successes. This is because project-based activities requires systematic and step-by-step operation in which the learners has to practically study and figure out what they want to know by their own, moreover project-based activities can be performed within class working with the instructor, or outside the class/school working with external educators or researchers; can be individual or group activities. Types of the projects can be single-case or multiple case mentoring, workshop training, media production, computer-based instruction or web-based instruction, and research activities (Liu & Richmond, 2005).

Gardner asserts that this theory can be applied to every characteristic of learners. Therefore, the multiple intelligences can be grouped into three domains as follows.

1. Analytic domain is the multiple intelligences groups that focus on thinking and analysis (naturalistic intelligence, musical intelligence, and logical and mathematic intelligence).
2. Introspective domain is pointed at imagination and understanding (intrapersonal intelligence, existential intelligence, and spatial intelligence).
3. Interactive domain is aimed at communication and interpretation (linguistic intelligence, interpersonal intelligence, kinesthetic intelligence).

3. The Stufflebeam's CIPP evaluation model

The CIPP (Context-Input-Process-product) evaluation model is a comprehensive framework for guiding formative and summative evaluations of programs, projects, personnel, products, institutions, systems, and lessons. This model was devised by Egon Guba, and further developed by Daniel Stufflebeam in 1966 to guide mandated evaluations of U.S. federally funded projects because these emergent projects could not meet requirements for controlled, variable-manipulating experiments, which then were considered the gold standard for program evaluations. Since then, the model has been widely applied and further developed. Those applying or contracting others to apply the model have included government officials, foundation officers, program and project staffs, international assistance personnel, school administrators, physicians, military leaders, and evaluators. The model is configured for use in internal evaluations conducted by an organization's evaluators, in self-evaluations conducted by project teams or individual service providers, and in contracted external evaluations. It has been employed throughout around the world and applies to short-term and long-term (Stufflebeam, 2007). In particular, it provides a framework for detecting unexpected defects and strengths. CIPP focuses on improvement of designs, where priority is given to planning and implementation of development efforts.

The model organizes the interests, questions, values, and participation of potential evaluation users and stakeholders around four types of evaluation:

1. Context evaluations, which investigate the socio-political, organizational, and other contextual variables associated with the need for instruction using the internet.
2. Input evaluations, which compare alternative inputs or means for meeting the needs, including web-based instruction.
3. Process evaluations, which formatively assess the planning, design, development, and implementation of instruction to improve it.
4. Product evaluations, which allow summative judgments to be made regarding the quality, utility, and value of existing instruction. Ideally, evaluation of all four types will occur simultaneously and repeatedly throughout the life of an organization which has multiple instructional development projects, programs, initiatives, courses, and so on coming and going.

Methods

The synthesize of the model were separated into five stages: 1) examination of related literature, including web-based collaborative learning, collaborative learning technique, multiple intelligences, Stufflebeam's CIPP evaluation model, and others from articles, books, journals, proceedings, and etc., 2) interviewing of the five experts for preliminary study using unstructured interview questions, 3) synthesize a multiple intelligences supported web-based collaborative learning model using Stufflebeam's CIPP evaluation model by using focus group discussions with ten experts, who graduated doctorate degree in the area of information and communication technology or computer education or educational research, 4) evaluation of the synthesized model by using five-scale questionnaire with five experts, and 5) revision and conclusion of the model.

Results

1. The synthesized model

The synthesize of the multiple intelligences supported web-based collaborative learning model using Stufflebeam's CIPP evaluation model was composed of fives modules is shown in Figure 1 as follows:

1. The online learning module, it is the main part of the model that consisted of three parts as the collaborative learning module, MI matching module, and content database, that connects with CIPP evaluation module for evaluation the student's learning outcomes, such as learning achievement, student's satisfaction, and efficiency.
2. The collaborative learning module, that consisted of three parts as:

   2.1 Analytic content, it provides contents and learning groups to suit with the analytic MI skills of students. The analytic focused on thinking, and questioning which consisted of 1) naturalistic intelligence, 2) musical intelligence, and 3) logical and mathematic intelligence. This part connects with analytic STAD (student team achievement divisions), that is collaborative learning technique such as competition and reward that conformed to the analytic content. The learning activities were simulation, acquisition, practice, and case study.

   2.2 Introspective content, it provides contents and learning instruments for each learning group which was matched with the introspective domain. This introspective emphasized on the mental imagine and understanding composing of 1) intrapersonal intelligence, 2) existential intelligence, and 3) spatial intelligence. This part connects with introspective STAD, that is collaborative learning technique in the introspective domain. The learning activities were acquisition, questioning, practice, and case study.

   2.3 Interactive content, it provides contents and learning groups to the interactive domain. This domain focuses on communication and interaction skills which consisted of 1) linguistic intelligence, 2) interpersonal intelligence, and 3) kinesthetic intelligence. This part connects with interactive STAD, that is collaborative learning technique such as competition and reward that conformed to the interactive content. The learning activities were simulation, acquisition, practice, and case study.

3. Content database, it was the database that accumulated learning lessons and learning groups from the verification of teacher (or expert) in each subject that created by teachers to support the three MI groups: analytic, introspective, and interactive.
4. MI matching module, it divided students into three groups by matching their MI potential from MI test score with GPA. The GPA was separated into three levels as good, moderate, and weak.
5. CIPP evaluation module, it was applied to thr evaluation of four concepts: context, input, process, and product. The context and input were exploited in the evaluation structure of lesson by using the validity with the value of the index of item-objective congruence (IOC). Questionnaires and experts were used in matching the lesson with learner multiple intelligences. The process was measured by leaning outcome. In Addition, the output was investigated by questionnaires to measure skills and capabilities of teachers and students. Then, the conclusion was made.

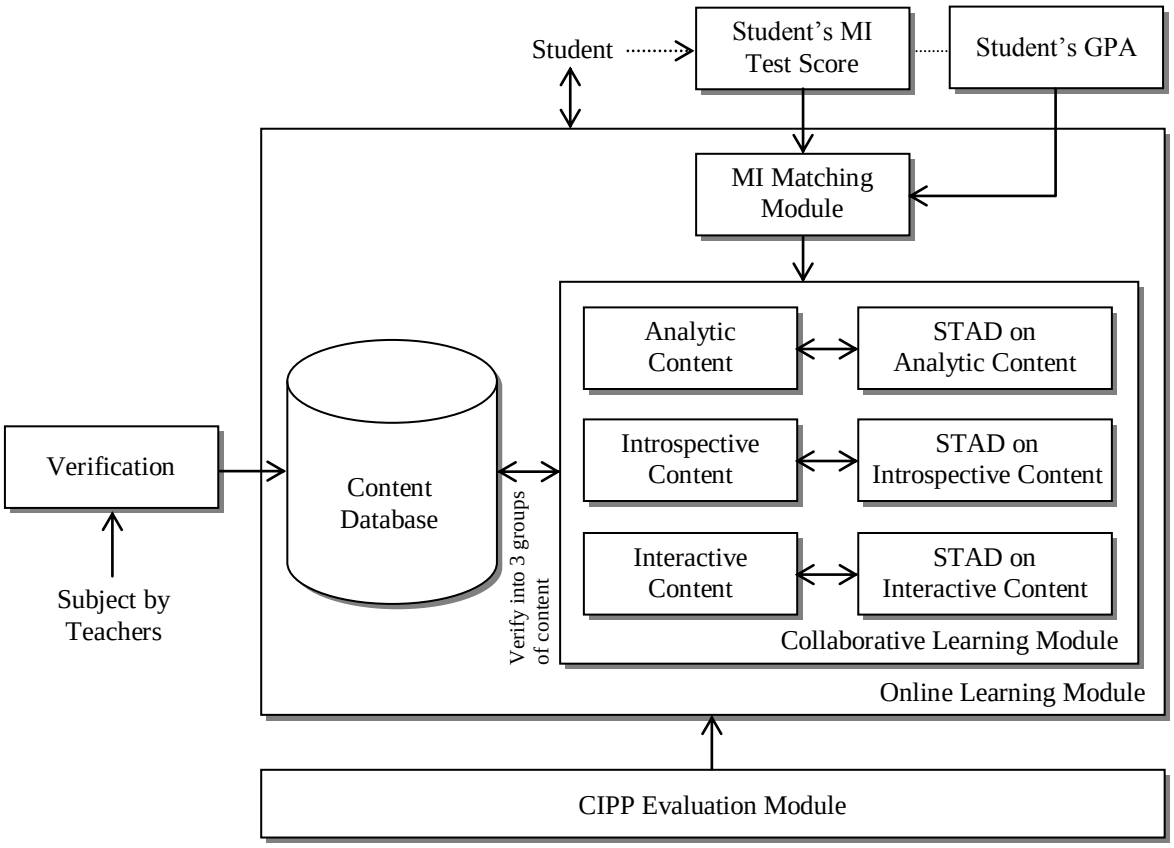

Figure 1. The multiple intelligences supported web-based collaborative learning model using Stufflebeam's CIPP evaluation model

2. The evaluation of the model

The evaluation results of the synthesized model by using five-scale questionnaire from five experts are shown in Table 1.

Table 1. The evaluation of the model

Aspects	Mean	S.D.	Interpretation
1. Online learning module	4.20	0.45	good
2. Collaborative learning module	4.60	0.55	very good
3. Content database	4.60	0.55	very good
4. MI matching module	4.40	0.55	good
5. CIPP evaluation module	4.40	0.55	good
Total	**4.44**	**0.51**	**good**

In Table 1, the total average scores is 4.44 (S.D. = 0.51) at a good level, that means all experts agree with the appropriateness of the synthesized model and can be used the model to create web-based collaborative learning.

Conclusion and discussion

Web-based collaborative learning has a large potential for knowledge acquisition. However, it has different characteristics compared with conventional learning scenarios, especially with respect to the social communications, messages exchange, cognitive load and participation of the students. Thus, understanding of web-based collaborative learning for knowledge management is a critical issue.

Because web-based collaborative learning is a social interaction that involves a community of students and teachers, where members acquire and share experience or knowledge. Based on social constructivism, working together while accomplishing a task is seen as a characteristic of a powerful learning environment, aiming at active construction of knowledge (Van Merrienboer et al., 2003). From the social-cultural concept of activity theory, technology can play a role as mediator for enriching group activities, particularly in terms of information and communication technology. Because these technologies have changed the nature of open learning in the last decades by providing a way for communities of students and their teachers to interact with one another despite being situated in differing geographical locations. Online interaction is also increasingly being introduced into a flexible model of learning for campus-based learners. Meanwhile, there are many ways to incorporate multiple intelligences theory into the learning. Although this theory was not originally designed for use in a web-based learning application, it has been widely embraced by educators and enjoyed numerous adaptations in a variety of educational settings. Teachers have always known that students had different strengths and weaknesses in the classroom. Some teachers set up learning centers with resources and materials that promote involving the different intelligences. Other instructors design simulations that immerse students into real life situations. Careful planning during the lesson design process will help to ensure quality instruction and valuable student experiences in the learning (Armstrong, 1994).

It is important for teachers to carefully select activities that not only teach to the intelligences, but also realistically mesh with the subject matter of the lesson or unit. Multiple intelligences theory should enhance, not detract from what is being taught. Similarly, Gardner talks about benefits of MI as the more ways a teacher can explain or teach a topic or concept, the more likely that both the teacher and the students will understand it deeply (Sternberg, 2009). Thus, this study introduces a multiple intelligences supported web-based collaborative learning model using Stufflebeam's CIPP evaluation model, that employed mixed innovations consisting the web-based learning, the collaborative learning technique and the Stufflebeam's CIPP evaluation model. In terms of the Stufflebeam CIPP evaluation model, it is very useful for evaluating an established program that can be applied in education setting for interpreting and explaining the quality results such as the learning outcomes. In conclusion, this can be used the synthesized model to complete the web-based collaborative learning to enhance the student's satisfaction with the learning experience, to promote a positive attitude toward the subject matter, to provide weaker students with extensive tutoring, to provide stronger students with the deeper understanding that comes only from teaching material, and to promote learning goals rather than performance goals, etc.

References

Adesoji, F.A. & Ibraheem, T.L. (2009). Effect of student teams achievement divisions and mathematic knowledge on learning outcomes in chemical kinetics, *The Journal of International Social Research.* 2(6), pp.15-16.

Armstrong, T. (1994). *Multiple Intelligences in the classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.

Campbell, L., Campbell, B., & Dickinson, D. (1996). *Teaching and Learning through Multiple Intelligences.* Allyn & Bacon.

Felix, J. L. (1979). Research and evaluation to improve instruction: The Cincinnati strategy. *Educational Evaluation & Policy Analysis,* 1(2), pp.57–62.

Gardner, H. (1983). *Frames of Mind: The theory of multiple intelligences.* Twentieth Anniversary Edition with new introduction. New York, NY. Basic Books, 2004.

Gardner, H. (2006). *Multiple intelligence new horizons in theory and practice.* New York, NY. Basic Books.

Gerber, P. J. & Popp, P. A. (1999). Consumer perspective on the collaborative teaching model: view of students with and without LD and their parents. *Remedial and Special Education,* 20(5), pp.288-296

Gerlach, J. M. (1994). "Is this collaboration?" In Bosworth, K. and Hamilton, S. J. (Eds.), Collaborative Learning: Underlying Processes and Effective Techniques, *New Directions for Teaching and Learning*, 59.

Heacox, D. (2002). *Differentiating instruction in the regular classroom: How to reach and teach all learners, grades 3-12.* Minneapolis, MN. Free Spirit Publishing.

International Institute for Communication and Development (IICD). (2008). *Using ICT in the Education Sector*. pp.4.

Innovative Learning. (2009). Student team achievement divisions. [Online] Available: http://www.innovativelearning/learning/cooperative_learning.html (May 12, 2012).

Jianhua, Z. and Akahori, K. (2001). Web-Based Collaborative Learning Methods and Strategies in Higher Education, *Proceedings of 2nd International Conference on Information Technology Based Higher Education and Training,* Kumamoto, Japan, July 4-6, 2001.

Johnson, D. W., & Johnson, F. P. (1999). *Joining Together: Group Theory and Group Skills.* Englewood Cliffs, N. J.: Prentice Hall.

Lehr, A. E. (1999) The administrative role in collaborative teaching. *NASSP Bulletin,* December, pp.105– 111.

Liaw, S. S. (2004). Considerations for developing constructivist Web-based learning. *International Journal of Instructional Media,* 31(3), pp.309-321.

Liu, L. & Richmond, A. (2005). Project Based Learning in Information Technology Courses. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2005,* (pp.3282-3287). Chesapeake, VA: AACE.

MacGregor, J. (1990). "Collaborative learning: Shared inquiry as a process of reform" In Svinicki, M. D. (Ed.), *The changing face of college teaching, New Directions for Teaching and Learning,* 42.

Matthews, J. M. and Hudson, A. M. (2001). Guidelines for Evaluating Parent Training Programs. *Family Relations,* 50 (1), pp.77-86.

Nicholson-Nelson, K. (1998). *Developing students' multiple intelligences*. New York, NY: Scholastic Professional Books.

Nicholson, T. (1998). Using the CIPP model to evaluate reading instruction. *Journal of Reading,* 32(4), pp.312–318.

Puntambekar, S. (1999). An integrated approach to individual and collaborative learning in a web-based learning environment. CSCL '99, *Proceedings of the 1999 conference on computer support for collaborative learning,* Dec 12-15, 1999, Stanford University, California.

Smith, G., Kromrey, J., Barron, A., Carey, L., Hogarty, K. & Hess, M. (2004). Assessing the Pedagogical and Technological Quality of Online Courses. In R. Ferdig et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2004,* (pp.1047-1054). Chesapeake, VA: AACE

Stufflebeam, D.; Madaus, G. & Kellaghan, T. (2000). *Evaluation Models: Viewpoints on Educational and Human Service Evaluation.* Boston: Kluwer-Nijhoff.

Stufflebeam, D. L., & Shinkfield, A. J. (2007). *Evaluation theory, models, & applications.* San Francisco, CA: Jossey-Bass.

Resta, P. (2002). *Information and communication technologies in teacher education: a planning guide.* UNESCO.

Richards, M. , Elliot, A. , Woloshyn, V. & Mitchell, C. (2001). *Collaboration uncovered: The forgotten, the assumed, and the unexamined in collaborative education.* Bergin & Garvey.

Sternberg, R. (2009). *Intelligence, Instruction, and Assessment: Theory and Practice,* Taylor & Francis, Mahwah, New Jersey.

Trentin, G. (1999). Network-based collaborative education. *International Journal of Instructional Media,* 26(2).

Van Merrienboer, J. J. G., Moerkerke, G., & Gros, B. (Eds.) (1998). Instructional design for problem-based learning, *Proceedings of the third workshop of the EARLI SIG Instructional Design*. Maastricht, The Netherlands: Maastricht University Press.

Wang, Q.Y. (2008). A generic model for guiding the integration of ICT into teaching and learning. *Innovations in Education and Teaching International,* 45(4), pp.411-419.

Wang, X. C., Hin, D. M. & Kanfer, A. G. (2001). Potential of computer-supported collaborative learning with different learning styles. *Journal of Research on Technology in Education,* 34(1).

Williams, D.D. (1999). A Framework for Evaluating Web-based Instruction. *Proceedings of WebNet World Conference on the WWW and Internet 1999,* (pp.1631-1632). Chesapeake, VA: AACE.