

The Role of Online Learning in Teaching Critical Thinking (CT) and Promoting Creativity Among Students

Maha Al Jarad*

PhD candidate, King Saud University

*Corresponding Author

Maha Al Jarad, PhD candidate, King Saud University.

Submitted: 2024, Dec 02; Accepted: 2024, Dec 26; Published: 2025, Jan 07

Citation: Jarad, M. A. (2025). The Role of Online Learning in Teaching Critical Thinking (CT) and Promoting Creativity Among Students. *J Robot Auto Res*, 6(1), 01-07.

Abstract

This report investigates the role of online learning in fostering critical thinking (CT) and enhancing creativity among students. It starts by defining CT and examining educational programs designed to develop this essential skill. The research is based on three key theoretical frameworks: affordance theory, socio-cultural theory, and transactional distance theory, providing a multidimensional perspective on how CT can be cultivated. Additionally, the potential of blogs as digital tools to boost critical thinking is briefly examined. The findings emphasize the important role of technology in promoting critical thinking skills, highlighting its transformative potential in the modern context of education.

Keywords: Online Learning, Critical Thinking, Promoting Creativity

1. Introduction

Information Communications Technology (ICT) has an ever-increasing role in pedagogy, as part of wider social change and development [1]. The intended purpose of technological development within educational settings is to enhance the quality of learning experience and promote interactivity in the learning process [2]. Specifically, technological innovation should promote student engagement with the subject matter under study and facilitate important cognitive skills such as critical-thinking (CT) and problem-solving. CT is widely regarded as an essential skill for academic success [3]. However, there is a paucity of research on the effectiveness of information technology for promoting CT in higher education [2,4,5]. Many studies of CT and online learning are focusing on school-level education which may lack validity with older students. Moreover, most of the studies in this field are poor quality [6]. One systematic review of the research evidence drawn from 12 individual studies has suggested that technology can be helpful in promoting CT and creativity. The two highest quality studies indicated that computer-based concept mapping with automated scoring can generate an account of student CT and creative thinking about complex relationships. Furthermore, the use of ICT can be helpful to teachers as it enables the storage and recording of student understanding of set topics. It changes the way that assessment/ feedback is given so that teachers can focus on new ways of supporting learning by students. Computerised feedback is also established as improving student performance at another time using the same test material [7]. While promising, these results must be approached with caution since they are drawn

from a small pool of studies of varying degrees of methodological quality. In general, CT skills would appear to develop through a process of collaborative learning. This is an educational approach characterised by students working in groups towards a common outcome. Once students are engaged in collaborative thinking, their thoughts and ideas can be shared through online communication [8]. However, there can be no automatic assumption that technology promotes CT. Indeed, Harlin & Deakin Crick highlight that there is a complex relationship with variable outcomes according to many factors including the gender of the student, the type of technology used and the topic under study. They have concluded that collaborative learning using ICT does not necessarily enhance problem-solving and CT in all cases.

2. What Does Critical Thinking Mean?

Critical thinking is a complex term, with no universal consensus on meaning. However, Hudgins and Edelman (1986, p. 333, have defined critical thinking as “The disposition to provide evidence in support of one’s conclusions and to request evidence from others before accepting their conclusions” [9]. Moreover, according to Scriven and Paul Critical thinking (CT) “is the intellectually disciplined process of actively and skill-fully conceptualizing, applying, analysing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action”, CT is a process of asking the ‘right questions’. It starts with the development or identification of an argument, before moving towards evaluation [10,11].

This requires three steps of asking questions which are centred on knowledge-gathering on the topic, followed by answering the questions by focusing on their impact on stated inferences. The final step required is the deployment of critical questions to further refine understanding and critically appraise the information available. Elaborating further in relation to online learning, define CT as “the process of analysis, evaluation, inference, and interpretation of resources and activities (gathered via online experiences with course material) [12]”. Finally, Lipman has characterised it as “skillful, responsible thinking that facilitates good judgments because it (1) relies upon criteria, (2) is self-correcting, and (3) is sensitive to context” claims that Lipman’s definition is important because it combines the concepts of evaluative standards, skills required and subjective judgements into a holistic understanding of CT. From these different viewpoints, CT can be regarded as a mode of thinking where individual students take responsibility for their own learning journey by thinking about the information provided and imposing their own intellectual skills on the resources to make reasoned choices and informed decisions.

3. Can We Teach Critical Thinking?

There has been a long-standing interest in the best teaching methods for promoting CT amongst students. For some, teaching ‘thinking’ is not possible as it ends in ‘muddle and tears’ [13]. Indeed, situated cognition theory proposes that there are truly no general critical thinking skills, and therefore classroom CT teaching is a fruitless endeavour [14]. However, others believe that teaching CT skills is an essential part of the educational process, particularly at higher education level (Stassen, Herrington & Henderson, 2011). One method of achieving this is through cooperative talk [13]. Critical thinking is an essential skill in an information-age which should be actively promoted and advocated within education so that learners are able to see the ‘bigger picture holistically’.

4. Evidence Supporting Critical Thinking Teaching

4.1 Thinking Together Approach

The thinking together approach was developed in the UK [15]. This approach adopts the belief that cooperative thinking skills should be explicitly taught, and a vital aim behind this is to empower teachers and pupils to conceive talk as ‘thinking aloud with others’ [16]. This approach encourages exploratory talk in primary schools. The Thinking Together approach implies significant support to a kind of “exploratory talk” that is very effective for teaching thinking and learning. Relevant information is shared between class participants; the group seeks agreement through discussion and negotiation. Alternative views are aired and all members are encouraged to contribute their views [15]. claims that the social-linguistic process is pivotal to improving collective and individual learning outcomes. Exploratory talk occurs when people engage critically with others’ thoughts and suggestions [17].

The Thinking Together researchers and teachers have shown that the elements of active talk are that every participant is inspired to contribute; every participant should attend carefully; different views and opinions are considered; knowledge can be shared;

reasoning are encouraged; challenges are greeted; before making decisions, alternatives need to be taken into account; all participants should reach an agreement through their talk; it is conceivable that participants can alter their mind; everyone need to know that discussion is a method of learning [16]. The programme of thinking together is based on a collective and social constructivism vision of education and learning [15]. Despite the apparent benefits of encouraging learning through discussion, there is little opportunity to engage in open questioning, collaborative talk and debate in British classrooms. One explanation is that teachers may not feel confident to allow such freedoms in their classrooms, while being under pressure to meet the requirements of the set curriculum [18].

4.2 Philosophy for Children Programme (P4C)

In the 1970s, philosopher Matthew Lipman developed the P4C approach and, nowadays, it is globally used in classrooms in 16 languages. P4C confirms that reasoning stems from discussion and communication. When all dialogue members share different thoughts then diverse perspectives must be taken into account. Many participants consider that what can be seen clearly to them will not necessarily be clear to individuals who have different views. Therefore, the ability to working together and the flexibility of accepting others’ ideas are increasing among students. The ‘P4C’ programme uses decisive written stories with open-ended puzzles to stimulate discussion. Children ask questions centred around the role of the teacher that demand good thinking about these questions (usually by modelling and showing) [19,20]. Lipman’s philosophical approach is to train children how they can be good thinkers, think for themselves and produce optimal and knowledgeable choices [21].

This approach is delivered to children from age 6-16, and aims to enhance child-centred reasoning and judgement skills by promoting thinking. Lipman argues that these skills are very important for both critical and creative thinking that are gained in the setting of language. A critical review of controlled studies assessing P4C generated a statistically significant result in favour of the intervention, drawn from different countries with different pupil demographics. However, there is some reservation about the external validity of the studies included in the review. Positive outcomes recorded in classrooms where P4C is already routinely used may not reflect the success of the method in typical educational settings [21]. Using Vygotsky theory provides an important platform for exploring how children can acquire CT skills through shared talking and problem-solving. Indeed, states that Vygotsky considers that conversation is essential skill and also for engaging with others in dialogic space. It can help people to connect and communicate with others in a productive way. In addition, child discussion and talk can help solve different problems and think about different solutions. What is most important in Vygotsky’s belief is the notion that children watch dialogue, talk and act in ways that can guide them to make wisdom of situations [22].

5. Can technology Enhance Teaching Critical Thinking?

The technological advancement has given rise to a ‘digital age’ characterised by the rapid availability of information and

potential for interaction between individuals as they move towards knowledge acquisition [23]. Many of the features of new technologies lend themselves to the teaching of critical and creative thinking, such as wiki and blogs. Learners are increasingly technology-skilled 'digitally native' users who use hardware and software tools in their everyday lives [24]. However, the challenge rests with educators to incorporate the needs and interests of modern-day learners into an educational system that was designed and developed before technology had such a social impact.

6. What Is the Role of ICT in Teaching Critical Thinking Skills?

ICT can play several key roles in educating individuals' thinking skills. Firstly, it functions as a teaching machine supplying the 'mind tools' and the instrument for exploring knowledge and communicating [25]. explains that 'Mindtools' are cognitive computer software that allows learners to gather, represent and communicate or express knowledge while using critical thinking skills [26]. ICT can be an intellectual partner to the learner so they can articulate what they know, reflect, negotiate and construct meaning. It can support intentional, mindful thinking through interaction [27]. The social negotiation processes that are central to critical thinking can be supported by various types of synchronous and asynchronous computer-supported software environments. Online communications contain live conversations, such as chat-rooms, and videoconferencing, whereas asynchronous discussions can occur through electronic mail, computer conferences and bulletin boards. In both types, it has to be assumed that students are able to use the technology in order to make a meaningful contribution, as well as the necessary language skills to communicate [28]. Learners can join online in a number of collaborative activities where critical thinking can be performed. Connecting online, learners need to understand the aim of these activities and own the required social skills to ask the correct questions, listen carefully to each other, share work and take turns, support each other to enhance the learning process, respect each other's ideas, construct each other's ideas, and think in new ways [10].

7. Designing the Online Learning Environment

Research evidence suggests that it cannot be assumed that online technologies will always create critical thinking and collaborative learning amongst students [7]. Therefore close attention is required to the design features that optimise learning outcomes. This is especially important in the era of distance learning education, which is often delivered online. Technology could positively or negatively contribute to the construction of community learning environments [29]. As a sequence, a principal purpose of distance learning is establishing learning communities where participants have the feeling that they are in a connection and assistance to each other so that they can build on each other's efforts and ideas to learn [30]. Rovai argues that motivating factors can be barriers or keys to success to participating in online learning courses.

Some learners may have motivation produced by their personal interest and enjoyment at the beginning of the course and this is what we call intrinsic motivation, others may not. Thus, the teacher

has to offer the missing motivation (extrinsic) tempted by external factors for learners to participate in designing online discussions to provide discussion forums for socio-emotional discussions. This type of involvement can foster a strong feel of community within the virtual classes. To create a community of online learning there are three phases that should be taken. Firstly, learners should become familiar. Secondly, learners, before starting to interact with the online course subject matter, they must start to discover other knowledge about themselves and their classmates through extended interactions. Finally, they start helping each other and extending their relationship outside the programme requirements [31].

By creating virtual communities, academically-able students can mix with less-able learners, and educators can also contribute [32]. The effectiveness of the virtual learning community is determined by the willingness and ability of members to share ideas and reflect on the learning process together as a group. This works best when learners know each other, engage in online discussion about their projects and support each other [33]. This can be facilitated by the availability of the appropriate technological tools such as journals, user-response to discussions, emailing, creating digital presentations and collaborating [33]. These, along with other tools such as blogs and wiki's, provide an opportunity for reflection on learning, making connections and constructing knowledge and understanding. Thus, "collaboration leads to shared knowledge and higher critical thinking skills" [29].

For, online learning should involve higher-order thinking skills [34]. These are required to discriminate between information sources found online, by validating, cross-referencing and prioritising. Through working in collaborative groups, the benefits include increased learner motivation, opportunities to develop critical thinking/ problem-solving skills and engaging in a social environment where individual's are given the opportunity to share, evaluate, challenge the views of others, as well as to construct new knowledge together (Bruffee cited in [35]. New technology allows for group discussions to take place which gives individual learners the opportunity to immerse themselves in different points of view before making reasoned decisions of their own [10].

One example of an online technology which is used for promoting critical thinking is the blog. It can be used to reflect on traditional educational experiences, such as a lecture, or as an extension on the classroom dialogue. Thus, it can be a multi-purpose platform that might be used for clarification about assignments, activities or themes, as well as a source for educational learning if resources are shared [36]. Some believe that blogs are a communication channel which can be utilised in blended educational environment flexibly, and to promote critical thinking [37]. Campbell mentions that blogging has provided an opportunity for students to learn collaboratively during a virtual learning environment. In this way, students can share their knowledge, notions, opinions, and views with others to reach agreement or disagreement and retain information so learners can benefit from it in learning processes.

8. What are the Relevant Theoretical Contributions to this Field?

There are many theories on critical thinking that have been developed and empirically tested. However, three are selected for their relevance to the application of technology.

8.1 Affordance Theory

The concept 'affordance' was presented by Gibson [38] to explain what an environment is: "...[as] something that refers to both the environment and the animal in a way that no existing term does [38]. It implies the complementarity of the animal and the environment". Gibson maintains that affordance developed to be a very powerful perception in a wide range of various arenas [39]. Recently, the term affordance has been used increasingly in educational literature, particularly the literature that refers to utilizing technology in virtual learning environment. The term has progressively appeared especially in the context to connect the characteristics of different technologies to their possible value aspects in education methods [40]. The most powerful affordance of technology for learning purposes is their capability to allow learners to communicate and interact with others [41]. However, it is necessary to determine which technologies are important to learning outcomes and which promote learning through interaction. Interaction can be viewed and measured in terms of the various participants. In terms of distance learning education, this could be student-student, student-teacher and student-context interaction [42]. These interactions form the basis of a collaborative learning community which is central to the online learning experience [43]. New technology has given rise to the possibility of communicating and collaborating with others, while also permitting reflection and critical debate over a long period of time [44].

8.2 Sociocultural Theory

Sociocultural theory is an emerging theory in psychology that examines the contributions of society to individual learning and development. In particular, it explores the interaction between person-centred development and the cultural environment in which they are immersed. One important part of social-culture theory is the Zone Proximal Development (ZPD) concept (Kendra, n.d.). ZPD theory emphasises the connection between a individual student-centred knowledge and the knowledge that s/he acquires within the social interaction with others [23]. Hodges maintains that sociocultural analysis utilises this relation and retains it by saying that learners gain new knowledge through social communication. The particular emphasis is on the dialogue between learners who engage in communication together as a means of collaborating and negotiating the meaning and knowledge. Morever, states that collaborative problem-solving is best understood with reference to Vygotsky's zone of proximal development (ZPD) [45]. This asserts that students do not learn alone, and that people naturally acquire knowledge collaboratively. Therefore, education providers must go beyond information-provision for their students, and must acknowledge that their students will learn best as a group actively working together on projects, as well as interacting with their educators [46]. An important goal of distance online education is to create learning communities where members feel they have group

membership and can connect with their peers in collaborative learning. Neham illustrates how a socio-cultural educational environments can flourish in a synchronous web-based society of students. She clarifies that the social domain can be realised within the diverse forms of communication. Furthermore, cooperation and effective interaction can occur between mediators and students. These types of interactions are permitted by synchronous online tools.

8.3 Transactional Distance Theory

The concept of transactional distance theory is one that focuses on the gap in understanding and perceptions. This creates a 'psychological distance' between group participants who are learning together. The transactional distance in an educational course is related to three independent variables which are structure, dialogue and learner autonomy. These interact to create the transactional distance [47]. To elaborate further, explain that dialogue is more than communication. It can be characterised as a special form of communication that occurs within specific educational contexts where there are learning targets or deadlines [48]. It involves cooperation and understanding by the teacher, as well as supportive solutions to students' problems. Dialogue is about quality of communication between all parties, rather than merely a quantitative activity. Structure is defined as the educational goals of the programme of learning, the teaching methods that are used on the course, the assessment and appraisal methods, as well as the extent to which personal learner needs are met by the course and its design. The third element is autonomy which can be regarded as the extent to which a learner can control the learning experience. This relates to personal learner self-management in relation to educational goals, method of teaching received, rate of progress or course engagement and methods of assessment.

While transactional distance theory provides an interesting framework for exploring new technology, it is not without its critics. For it is not regarded as a valid theory because the relationships between the variables described above are ambiguous, there are no operational definitions provided for any of the variables and the inverse relationship between dialogue and transactional distance makes measurement and empirical testing of this model problematic [49,50]. Research studies that examine the empirical support for the theory are methodologically flawed and need to be interpreted with caution. Collectively, these three studies have provided some support for the existence of positive correlations between the variables. They support Moore's hypothesis that transactional distance is a function of dialogue and structure. However, they failed to address several important issues related to Transactional Distance Theory. Firstly, they did not address learner autonomy which was a critical element of Moore's theory. They also did not explore its impact on transactional distance. Secondly, both they and the Saba and Shearer studies emphasised dialogue as synchronous, in-class interaction (either face-to-face or via teleconferencing). They did not consider the effects of asynchronous communication (such as e-mail) as a means of interaction. Thirdly, they have failed to explore how the variables that exist in the educational setting might impact on dialogue,

learner autonomy and transactional distance. They have also failed to address how dialogue, structure and transactional distance relates to student learning more generally [51-64]. Therefore, the role of transactional distance theory in understanding how new technology might facilitate critical thinking is not clear due to limitations with the research evidence.

9. Conclusion

This report has explored the role of new technology, such as blogs, in the development of critical thinking skills in students. It has examined a number of definitions of critical thinking, before exploring existing educational programmes such as P4C and 'Thinking Together'. Three theories have been discussed that have relevance to this field. It is clear that technology has a potential role in the development of critical thinking skills amongst students. In the era of online distance education programs, it is necessary to examine effective methods of motivating students to work together in their problem-solving and knowledge acquisition. One aspect of this process is to understand the new role of the teacher in facilitating learning in a technological-age. Teaching critical thinking requires teachers, students and the technologies to interact together collaboratively to produce the desired outcomes. Furthermore, classrooms, whether traditional or virtual, need to emphasise characteristics that are associated with the development of critical thinking. Thus, discussion, talk, time to reflect, research and negotiate knowledge as a group are all important components of learning. Teachers need to be equipped with the 'new' skills to enable their professional delivery of learning in an ICT environment. This means that teacher training must include sufficient awareness of new technology, as well as promote the benefits of critical thinking amongst trainees' (McGuinness,1999). Despite the flourishing of ICT in the educational environment, there have been few studies that determine the effectiveness of various technological aids such as blogs or wiki's in promoting critical thinking. Further research and theoretical analysis is required before a conclusion can be made about the precise role of specific ICT tools in critical thinking and collaborative knowledge-production at school, further and higher education level.

References

1. Wegerif, R., & Mansour, N. (2010). A dialogic approach to technology-enhanced education for the global knowledge society. *New Science of Learning: Cognition, computers and collaboration in education*, 325-339.
2. Akyüz, H. İ., & Samsa, S. (2009). Critical thinking skills of preservice teachers in the blended learning environment. *Journal of Human Sciences*, 6(2), 538-550.
3. Johnson, S. C., Dweck, C. S., Chen, F. S., Stern, H. L., Ok, S. J., & Barth, M. (2010). At the intersection of social and cognitive development: Internal working models of attachment in infancy. *Cognitive science*, 34(5), 807-825.
4. Kurubacak, G. (2007). Identify Research Priorities and Needs for Mobile Learning Technologies in Open and Distance Education: *A Delphi Study. Online Submission*, 19(2).
5. Yang, Y. T. C. (2008). A catalyst for teaching critical thinking in a large university class in Taiwan: Asynchronous online

- discussions with the facilitation of teaching assistants. *Educational Technology Research and Development*, 56, 241-264.
6. Marin, L. M., & Halpern, D. F. (2011). Pedagogy for developing critical thinking in adolescents: Explicit instruction produces greatest gains. *Thinking skills and creativity*, 6(1), 1-13.
7. Harlen, W., Crick, R. D., Black, P., Broadfoot, P., Daugherty, R., Gardner, J., ... & Wiliam, D. (2003). A systematic review of the impact on students and teachers of the use of ICT for assessment of creative and critical thinking skills.
8. Coutinho, C. P. (2007). Cooperative learning in higher education using weblogs: a study with undergraduate students of education in Portugal.
9. Cotton, K. (1991). Teaching thinking skills. *Northwest Regional Educational Laboratory, School Improvement Program*.
10. MacKnight, C. B. (2000). Teaching critical thinking through online discussions. *Educause Quarterly*, 23(4), 38-41.
11. Browne, M. N., and Keeley, S. M. (2000). Asking the right questions: A guide to critical thinking (5th ed). Upper Saddle River, NJ: *Prentice-Hall and University of Phoenix*.
12. Saadé, R. G., Morin, D., & Thomas, J. D. (2012). Critical thinking in E-learning environments. *Computers in Human Behavior*, 28(5), 1608-1617.
13. Wegerif, R. (2010). Mind expanding: teaching for thinking and creativity in primary education: *Teaching for Thinking and Creativity in Primary Education*. McGraw-Hill Education (UK).
14. Van Gelder, T. (2001, December). How to improve critical thinking using educational technology. In Meeting at the crossroads: *Proceedings of the 18th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education* 539-548.
15. Wegerif, R., Linares, J. P., Rojas-Drummond, S., Mercer, N., & Velez, M. (2005). Thinking together in the UK and Mexico: Transfer of an educational innovation. *Journal of Classroom Interaction*, 40-48.
16. Dawes, L., Mercer, N., & Wegerif, R. (2003). Thinking Together: A programme of activities for developing seeking,listening and thinking skills for children aged 8-11. Birmingham: *the Questions publishing Company LTD*.
17. Monaghan, F. (2004). *THINKING TOGETHER – USING ICT TO DEVELOP COLLABORATIVE THINKING AND TALK IN MATHEMATICS*, 24(June), 69–74.
18. Littleton, K., Mercer, N., Dawes, L., Wegerif, R., Rowe, D., & Sams, C. (2005). *Talking and thinking together at Key Stage 1. Early years*, 25(2), 167-182.
19. Lipman, M., Sharp, A. M. & Oscanyan, F. S. (1980). Philosophy in the classroom. *Philadelphia. Temple University Press. Macdonald*.
20. Lipman, M. (1995). Critical thinking - what can it be? In A. Ornstein & L. Behar (Eds.) *Contemporary issues in curriculum* 145-152.
21. Trickey, S., & Topping*, K. J. (2004). 'Philosophy for children': A systematic review. *Research papers in Education*, 19(3), 365-380.

22. Pound, L. (2006). How children learn from Montessori to Vygotsky-educational theories and approaches made easy. London: Practical Pre-school Books.
23. Hodges, V. (2009). Online learning environments and their applications to emerging theories of educational technology. EDTech Opportunity Realized, Boise State University.
24. Green, M. (2012). Digital natives. *British dental journal*, 213(2), 48-48.
25. Wegerif, R. (2002). Literature review in thinking skills, technology and learning.
26. Jonassen, D. H. (1996). Computers in the classroom: Mindtools for critical thinking. Prentice-Hall, Inc..
27. Jonassen, D. H. (2000). Transforming Learning with Technology: Beyond Modernism and Post-Modernism or Whoever Controls the Technology Creates the Reality. *Educational Technology*, 40(2), 21-25.
28. Jonassen, D. H., Carr, C., & Hsiu-Ping, Y. (1998). Computers as mindtools for engaging learners in critical thinking. TECH TRENDS-WASHINGTON DC-, 43, 24-32.
29. Wicks, D. J. (2009). Emerging theories and online learning environments for adults. Theories of educational technology.
30. Rovai, A. P. (2007). Facilitating online discussions effectively. *The Internet and Higher Education*, 10(1), 77-88.
31. Brown, R. E. (2001). The process of community-building in distance learning classes. *Journal of asynchronous learning networks*, 5(2), 18-35.
32. Barab, S. A., MaKinster, J. G., & Scheckler, R. (2004). Designing system dualities: characterizing an online professional development. *Designing for virtual communities in the service of learning*, 53-90.
33. Silvers, P., O'Connell, J., & Fewell, M. (2007). Strategies for creating community in a graduate education online program. *Journal of Computing in Teacher Education*, 23(3), 81-87.
34. Lundin, R. (1998). Being unreal: epistemology, ontology, and phenomenology in a virtual educational world. *American Journal of Distance Education*, 12(3), 53-65.
35. Smith, R. O. (2005). Working with difference in online collaborative groups. *Adult education quarterly*, 55(3), 182-199.
36. Pinkman, K. (2005). Using blogs in the foreign language classroom: Encouraging learner independence. *The Jalt CALL Journal*, 1(1), 12-24.
37. Oravec, J. A. (2003). Blending by blogging: Weblogs in blended learning initiatives. *Journal of educational media*, 28(2-3), 225-233.
38. Gibson, J. J. (1986). *The ecological approach to visual perception*. Routledge.
39. Hammond, M. (2010). What is an affordance and can it help us understand the use of ICT in education?. *Education and Information Technologies*, 15, 205-217.
40. Day, D., & Lloyd, M. (2007). Affordances of online technologies: More than the properties of the technology. *Australian Educational Computing*, 22(2), 17-21.
41. Bruggen, v. J. (2005). Theory and practice of online learning. (T. Anderson & F. Elloumi, Eds.) *British Journal of Educational Technology* (Vol. 36, pp. 111-112). Athabasca University. doi:10.1111/j.1467-8535.2005.00445_1.x
42. Moore, M. G. (1989). Three types of interaction.
43. Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and higher education*, 10(3), 157-172.
44. Conole, G., & Dyke, M. (2004). What are the affordances of information and communication technologies?. *ALT-j*, 12(2), 113-124.
45. Huang, H. M. (2002). Toward constructivism for adult learners in online learning environments. *British journal of educational technology*, 33(1), 27-37.
46. Laurillard, D. (2000). New technologies, students and the curriculum: The impact of communication and information technology on higher education. Higher education re-formed, 133-153.
47. Moore Michael, G. (1993). Theory of Transactional Distance, Keegan D.(ed) *Theoretical principles of distance education*, London & New York.
48. Giossos, Y., Koutsouba, M., Lionarakis, A., & Skavantzou, K. (2009). Reconsidering Moore's Transactional Distance Theory. *European Journal of Open, Distance and E-Learning*.
49. Gorsky, P., & Caspi, A. (2005). A critical analysis of transactional distance theory. *Quarterly review of distance education*, 6(1).
50. Chen, Y. J., & Willits, F. K. (2007). A path analysis of the concepts in Moore's theory of transactional distance in a videoconferencing learning environment. *Journal of distance education*, 13(2), 51-65.
51. The Critical Thinking Community. (n.d.). Retrieved November 27, 2013, from <http://www.criticalthinking.org/pages/defining-critical-thinking/766>
52. Economics, m. s. b. (2007). students' critical thinking skills, attitudes to ict and perceptions of ict classroom learning environments under the ict schools pilot project in thailand.
53. Glaser, E. M. (1942). An experiment in development of critical thinking. *Teachers College Record*, 43(5), 1-18.
54. Hymers, J. (2009). "Little Children, 'Big' Questions" Does Mantle of the Expert create an environment conducive to philosophical thinking in the Early Years? University of East Anglia, 1-74.
55. Introducing Philosophy for Children. (2013). Retrieved November 11, 1BC, from http://p4c.org.nz/About_P4C.php
56. Jackson, M. (1987). Making sense of school, in: A. Pollard (Ed.) *Children and their Primary Schools: A New Perspective*. London: The Falmer Press.
57. Kendra, C. (n.d.). About.com psychology. Retrieved November 20, 2013, from <http://psychology.about.com/od/developmentcourse/f/sociocultural-theory.htm>
58. Kim, A. (2012). Philosophy for Children. *Educational Perspectives*, 44(1), 25-28.
59. McGuinness, C. (1999). From thinking skills to thinking classrooms.
60. McPeck, J. (1990). Teaching critical thinking: Dialogue and dialectic. New York and London: Routledge.
61. Murriss, K. S. (2008). Philosophy with Children, the Stingray and the Educative Value of Disequilibrium. *Journal of*

-
- Philosophy of Education, 42(3-4), 667–685.
62. Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
63. Web 2.0 in the Classroom. (2008). Retrieved November 25, 2013, from <http://web20intheclassroom.blogspot.co.uk/2008/10/ways-to-use-blogs-in-your-classroom-and.html>
64. Yang, S. (2009). Using Blogs to Enhance Critical Reflection and Community of Practice, 12, 11–21.

Copyright: ©2025 Maha Al Jarad. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.