

## Chapter 11:

# Student-Student Online Discussions: Testing Anderson's Interaction Equivalency Theorem (Equiv) in an Open Distance Learning University

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## Introduction

There have been significant changes in the delivery of distance education in the past ten years. These changes include the use of interactive digital technologies that have created new learning environments such as virtual collaborative learning. Equally significant are the theoretical developments that are intended to describe and guide teaching and learning in these new learning environments. A 2009 literature review (Zawacki-Richter et al. 2009) revealed gaps related to the theoretical basis of instructional and interaction models in distance education. The study found that as few as 3.5 per cent of the 695 articles published in prominent distance education journals between 2000 and 2008 had conducted research on theories and models. To reiterate Garrison (2000), theory development is central to the development of the distance education field and to its credibility and recognition. Also noteworthy is that theory cannot exist without being tested from time to time to provide empirical support for its use, especially in evolving fields such as distance education. One of the theories to receive such research attention is the interaction theory.

The concept of interaction can be traced to John Dewey, Lev Vygotsky, Albert Bandura, and Jerome Bruner's conceptions of social learning, depicting how community members influence one another's learning. As early as the 1970s Vygotsky noted that students' learning is the responsibility of community members, such as teachers, adults, as well as 'older' and 'experienced' children. Similarly, Bandura (1977: 22) argued that 'learning would be exceedingly laborious if people had to rely solely on the effects of their own actions to inform them of what to do'. A contemporary extension of these early theories that has received considerable attention in distance education is Michael Moore's theory of interaction. Moore (1989, 1990) identified three types of interaction in distance

education—namely student-content, student-instructor, and student-student. Moore (1989, 1993) suggested that a combination of these three is essential as none can function independently. A decade later a divergent extension of student-teacher, student-student, and student-content interactions was hypothesised by Terry Anderson (2003). Anderson's (2003) Interaction Equivalency (EQuiv) theory purports that students can benefit from deep and meaningful distance and online education with only one of the three interactions if it is at a high level. The theory is formulated into the following thesis statements:

**Thesis 1:** Deep and meaningful learning is supported if one of the three forms of interaction is at a high level. The other two may be offered at minimal levels or even be eliminated without degrading the educational experience.

**Thesis 2:** High levels of more than one of these three modes are likely to provide a more satisfying educational experience, although these experiences may not be as cost- or time-effective as less interactive learning sequences.

206 According to Miyasoe and Anderson (2011), the strength of EQuiv lies in its ability to provide educators with the means to analyse and evaluate which methods will produce the most effective and efficient design in each online or distance learning environment—without unilaterally prejudicing one type of interaction over another. Bernard et al.'s (2009) research found that one form of interaction can enhance high quality learning if instructional designs that foster high quality interactions such as cooperative learning are implemented. This supported an earlier observation (Johnson and Johnson 1990) that when students' endeavours are 'structured cooperatively' they strive hard to perform well. Cooperative learning in distance and online learning environments has been addressed by authors such as Blocher (2005), Kupczynski et al. (2012), and Jacobs and Ivone (2020).

Ideally, offering these three forms of interactions on an equal basis would be of benefit to students with diverse characteristics and preferences in mega open distance learning (ODL) institutions such as the University of South Africa (UNISA). However, as Anderson (2003) has alluded, offering all three interactions would mean high costs, especially for large student enrolments such as UNISA's. UNISA enrolls approximately 400 000 students annually (Unisa 2016). The question therefore is which interaction mix (Anderson 2012) design would be appropriate to address the needs of the students at UNISA and other ODL universities.

The aim of this study was twofold: (1) To test thesis one of the EQuiv by analysing student-student online discussions to understand the quality of these interactions. This is in line with Shearer (2009) who contends that the premise of theories and their underlying constructs should be continuously tested to ensure that they remain valid as the field of distance education evolves. (2) Another purpose was to develop a theoretical basis upon which the validity of thesis one of EQuiv can be assessed. For this study, the student-student interactions on the Discussion Forum tool of UNISA's Learning Management System (LMS) were analysed. This LMS is a platform where students interact to discuss their modules, assignments, examinations, and general issues related to their learning. They post messages to the discussion threads and receive written feedback from other students. This way they share information, discuss their learning problems and even form learning communities. However, it is unclear whether these interactions enhance deep and meaningful learning. To understand the quality of these interactions, the following questions were posed:

- To what extent do student-student online discussions enhance deep and meaningful learning?
- To what extent do student-student discussions adhere to dialogic principles?
- Do student-student online interactions show support for thesis one of the EQuiv?

## Literature on EQuiv

Attempts to validate different aspects of the EQuiv were carried out by Rhodes (2009), Miyazoe (2009), Bernard (2009), Miyazoe and Anderson (2010), Cabral (2012), Rodriguez and Armellini (2014, 2015). Most of these studies analysed online interactions, and their participants rated instructor-student interaction and content interaction as more important than student-student interactions. Student-student interactions were ranked the least preferred form of interaction. This was corroborated by Kelsey and D'Souza's (2004) study on the importance of interactions on the efficacy of distance learning, which indicated that student-student interactions were the least important form of interactions and were not considered critical to learning. Another study with similar findings was Rhode's (2009). The study used interviews to test the preferences of students about the various interactions they engage in during self-paced online courses. Rhode (2009) found that student-student discussions were not the preferred type of interactions but quality content and instructor interactions. Similarly, Miyazoe (2009) tested the priority value of the three interactions: student-student, student-teacher, and student-content. The results of the study showed that most

students valued student-content interaction for online interactions.

Another attempt at examining the EQuiv was a study by Bernard et al. (2009) that looked at the interaction interventions designed into DE courses to facilitate the three interactions. Of six research questions, one had asked which combination of student-student, student-teacher, and student-content interactions affected achievement. Data indicated that only student-content interactions affected high levels of achievement. Furthermore, in a study that examined whether EQuiv could be applied to online learning, Rodriguez and Armellini (2014) concluded that the three forms of interactions are more beneficial to students' learning than offering only one. In their subsequent study, Rodriguez and Armellini (2015) noted that offering only one type of interaction can lead to students' disengagement and confusion. This observation is consistent with Moore's (1989) transactional distance theory, which argues that low levels of interaction in DE can culminate in communication and pedagogical gaps that can lead to high failure rates and non-completion of studies. Contrary to this, Miyazoe and Anderson (2010) found that a student can achieve a quality learning experience through intense student-student interaction and without the instructor's assistance or appropriate course content. This corroborates the findings of Swan (2002), Kolloff (2011), and Roblyer and Ekhaml (2000) that high levels of student-student interaction have some impact on students' achievement and satisfaction.

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## **Theoretical foundations**

To establish a theoretical basis for understanding and analysing the quality of student-student interaction with the view of testing thesis one, the concepts dialogism, deep learning, and meaningful learning were reviewed and considered.

### **Dialogism**

Dialogue is described as interaction or a series of interactions that have qualities that other interactions might not have (Moore 1993: 24). Another perspective suggested by Burbules and Bruce (2001: 15) is that a dialogue 'is not an engagement of two or more abstract persons, but of people with characteristics, styles, values and assumptions that shape the particular ways in which they engage in discourse'.

Dialogism theory is based on the theoretical work of Mikhail Bakhtin, a Russian philosopher. Two assumptions of this theory significant for this paper are: first, human communication entails the interaction of diverse perspectives; second, it is important to examine the consequences of communication. Moreover, Stonten’s (2010: 16) view is that the meaning of dialogic varies from being an alternative word for learning via students’ active, collaborative discussion, to appropriating social discourses and establishing communities of inquiry. In addition, for learning conversations to be considered dialogic, they should consist of the following five principles: collective, reciprocal, supportive (no wrong answers), cumulative, and purposeful (Alexander 2006:19). Alexander’s (2006) framework of dialogic interactions is presented in the table below.

**Table 1: Dialogic Interactions** (Alexander,2006)

<b>Dialogic characteristics</b>	<b>Explanation</b>
Collective	Learning tasks are addressed together.
Reciprocal	Participants listen to one another’s ideas, share ideas, and consider alternative viewpoints.
Supportive	Ideas are expressed freely without fear of embarrassment over answers. Participants help one another.
Purposeful	Specific goals for learning are set.
Cumulative	Participants build on answers and other contributions to construct coherent lines of thinking and understanding.

The implications of the dialogic theory to distance education are varied. First, the theory implies that dialogic interactions should reflect the values, characteristics, and assumptions of the people involved in distance learning and their learning environment. Second, the aim of dialogic interactions should be to build strong learning communities (not mere collaborations) which will be support structures for distance education students. Third, interactions in distance education should be purposeful and should support learning. The interaction space like an LMS should allow students to discuss issues relating to their subjects. There are no restrictions as to how questions should be asked. Under this space students are allowed to discuss matters related to their modules (courses) and to their learning. More importantly the dialogic interactions should focus on the purpose of learning.

Furthermore, Stonten (2010) points out that the theory of dialogism can help universities understand how students enter a dialogue when trying to generate meaning and understanding for themselves. Knowing this will help universities reconsider the ways in which students work with language and texts, and the ways in which students, texts, and teachers interact (Stonten 2010).

Additionally, Moore (1990) and Shearer (2010) point to the significance of dialogue in distance education (DE). Dialogue is one of the three important variables in DE namely: 'dialogue', 'the structure', and 'learner autonomy'. Moore (1990) emphasises that these three variables are necessary to address the cognitive and communicative gap or 'space' called transactional distance. The transactional distance, which is both physical and psychological (Moore 1990) is said to affect learning and teaching if students and teachers are separated by space or time. This learning gap mostly affects DE students because DE is characterised by lower dialogue, greater structure, and 'thus greater transactional distance' (Moore 1990: 12). If transactional distance is not minimised to acceptable levels, it can contribute to students' feelings of isolation which can lead to reduced levels of motivation and engagement and consequently, attrition (Moore 1989). Shearer (2010) takes the point further by stating that dialogue is a key variable because dialogue alone can determine transactional distance—the lower the dialogue, the greater the transactional distance.

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Drawing from the above, two assumptions of the dialogic theory significant for this paper are: first, human communication entails the interaction of diverse perspectives; second, it is important to examine the consequences of such communication.

### Deep learning

Deep learning is an approach to learning whereby a student uses high-order cognitive skills like analysis, synthesis, and problem solving (Hermida 2009). 'Deep learners' are said to be autonomous, collaborative, and characterised by high meta-cognitive abilities, such as the ability to teach themselves (Hermida 2011). Majeski and Stover (2007) further explain that deep learning can foster the development and mastery of learning goals which emphasise the importance of growth and learning as a process. Moreover, it involves critical analysis of new ideas linking them to already known concepts and principles 'so that this understanding can be used for problem solving in unfamiliar contexts' (Hermida 2009:11). Table 2 presents the characteristics of deep learning.

**Table 2:** Characteristics of Deep Learning

Characteristic	Explanation
Knowledge is constructed	Students approach learning with the intention to understand and seek meaning and interpret knowledge in light of previous knowledge structures and experiences.
Knowledge is integrated	Students learn by integrating new knowledge to the existing knowledge.
Creation of meanings	Meaning is not imposed but rather created by the students' learning activities.
Intrinsic Motivation	Students feel the need to learn.
Discovery learning	Genuine learning: challenging questions are asked and opportunities to explore them are discussed.

## Meaningful Learning

Berry (2012) describes meaningful learning as learning with a purpose which allows those who engage in it to attach meaning to the world around them. Jonassen (2007) gives the following characteristics of meaningful learning: active, constructive, intentional, cooperative, and authentic. Among these, cooperative learning has been heralded as key in online learning environments. Types of cooperative learning—namely, formal, informal, and cooperative based groups—have been identified by researchers such as Johnson and Johnson (1990). Table 3 provides some characteristics of meaningful learning.

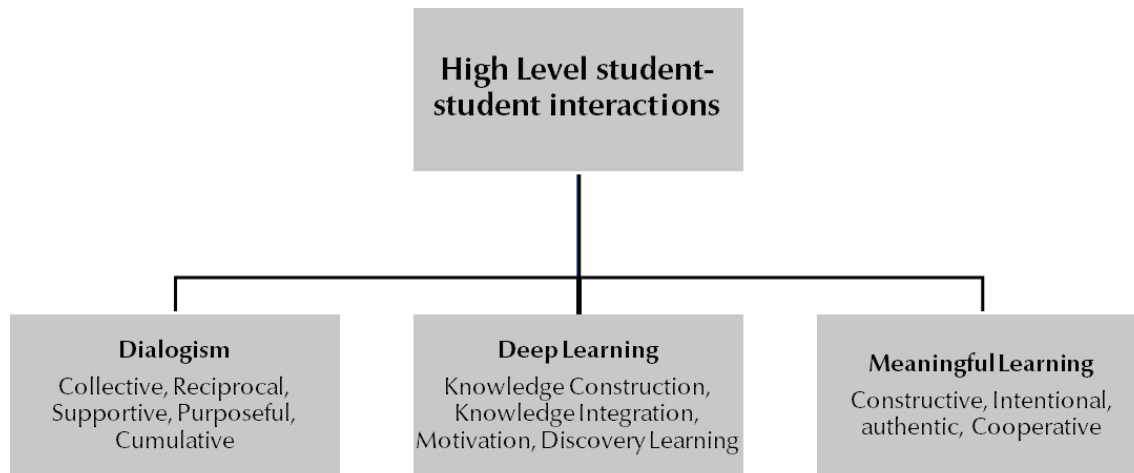
**Table 3:** Characteristics of Meaningful Learning (Jonassen 2007)

Characteristic	Explanation
Constructive	When students reflect on their learning activities in order to assign meaning to them
Intentional	When students can identify the learning goals and are aware of their progress toward actively achieving the goals
Authentic	When context-based, complex, and relative to real-life
Cooperative	When learning occurs through working with others and participating in a learning community (Grabe and Grabe 2007)

All the three concepts of EQUiv are represented in the conceptual framework below (Figure 1). The framework indicates that high levels of student-student interactions consist of dialogism, deep learning, and meaningful learning. Using this conceptual framework in analysing the data for this study, we determined that a high-level student-student interaction should comprise dialogism, deep learning, and meaningful learning.

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**Figure 1:** Conceptual Framework





## Methods

This study considered interpretive methodology because it is regarded as a useful and reasonable way of categorising qualitative research to make meaning (Taylor et al. 2006). The suitability of this methodology for this research lies in its ability to analyse spoken utterances (dialogue) to determine their communicative significance.

## Data Collection

I obtained permission to analyse *myUnisa* online discussions from the officials responsible for the site and from the Heads of Department for the modules. Considerations had been made to guarantee the anonymity of the participants and the modules. Data collection and analysis were done in two phases. Interactions covering a six-month period were collected in the first phase between 9 June 2011 to 8 December 2011. In the second phase, student-student interactions were observed between December 2014 to May 2018. Data were collected by recording the utterances by each participant on the LMS.

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## Data Analysis

The researcher used a combination of inductive and deductive data-driven approach to analyse students' interactions. A predefined framework, which drew from this study's conceptual framework and was guided by Ritchie and Lewis's (2003) framework analysis approach was utilised. This framework was developed out of the need to help the researcher interpret and understand the quality of high-level online student-student interactions. A Word matrix with rows and columns was generated for the framework to manage the data and categorise them into dialogism, meaningful learning, and deep learning.

Systematic procedures of data transcription, reading and rereading the transcripts, categorisation, and theme identification were done manually, line by line. Data were coded inductively and formed into categories. Then the researcher developed a rule to explain the patterns occurring from the data. Using deductive reasoning, the utterances occurring from the students' interactions were categorised against dialogism, meaningful learning, and deep learning concepts which appeared in the matrix.

## Findings and Discussion:

The data yielded useful insights which helped us answer the following research questions:

1. To what extent do student-student online discussions enhance deep and meaningful learning?
2. To what extent do student-student discussions adhere to dialogic principles?
3. Do students' interaction learning levels provide support for the equivalency interaction theorem?

It was found that the bulk of the 2011 discussions were on assignments and the examination while a few posts were on technical and affective issues. The researcher noticed that one student would initiate a topic for discussion and others would join in the discussion. The findings are based on the following three elements: Dialogism, deep learning, and meaningful learning.

## Dialogism

Generally, the study found that the dialogic discussions were about the examinations, requests for past papers, assignments, and marks. According to dialogic theory, the aim of dialogic interactions should be to form strong communities. The data show that strong learning communities were built, not mere collaborations. This was evident during both phases of the data collection. The majority of the students were requesting to be added to WhatsApp and BBM study groups which seem to have gained traction as support structures for this group of students and students in online environments generally. Those who did not have phones indicated their desire to form their study groups at their study centres.

Another strong element of dialogism in the data was that interactions were purposeful and supported learning. Several students asked about the examination and one student's answer was:

*'If you read this Tutorial letter, they tell you there is multiple choice ..... I suggest you go through assignment 1 questions and answers, just in case. If they tell you what is in the exams, then that is in the exams.'*

*'Make sure you understand all the content. The Lecturer said that the students should not*

*study textbook, just understand the content. Also go through exercises in your study material and past papers.'*

The discussions were found to be collective and very supportive. Students executed the element of supportiveness very well because they accommodated one another's questions and answers. Nobody was rebuked as not being correct or having asked a useless question. However, the cumulative and reciprocal elements of dialogism were not well executed. The students did not build on one another's answers to construct consistent lines of thinking and understanding. Similarly, for the reciprocal principle, there was no sharing of ideas, suggesting different viewpoints, or indulging in discussions. For example, one student would ask a question, *'What is in the exam?' or 'To which paper are you referring?'* In many cases, the majority of students would not even attempt to formulate their own responses, and there were no follow-up discussions to share ideas and questions.

What was interesting about this finding was that one student would play the role of a lecturer ('the more knowledgeable other' (Vygotsky 1978) by interpreting the tutorial matter such as reminding one another about where to read for examination and the examination duration times. This is corroborated by Rodriguez and Armellini's (2015) finding that during student-teacher interactions, some students took the role of the teacher and responded to the others where there was no teacher support. I found that this type of interaction can have advantages and disadvantages. It is advantageous because it is supportive. However, it does not involve others in discussions that address issues at greater depth. Another problem is that the viewpoint of the dominant students might be accepted uncritically. For example, one student would ask, *'What is in the exam?' or 'From which page can we find what you are saying?'* There were no follow up discussions even when the leader called out, *'Does anyone have a problem with something specific?'* This finding is consistent with Rodriguez and Armellini (2015) who uncovered that some students would just agree with one another or respond in a 'shallow' manner. Nsamba and Makoe (2017) also found that peer support was valued by other students, with the full knowledge that such support was given by people who were not conversant in the subject.

## Deep learning and meaningful learning

### *Phase 1*

Throughout the interactions there was evidence that supported students' knowledge construction, knowledge integration, creation of meaning, and discovery learning. Most of the discussions were heavily related to problems about downloading handouts for the modules, past-paper requests, examination duration, explaining the structure of the examinations, and tutorial letters. However, knowledge which needed critical thinking was not discussed. Neither were challenging questions asked, nor opportunities to explore them. Learning was not approached with the intention to construct, interpret, integrate knowledge, or create meaning. This was evidenced by the fact that there was some form of 'contentment' when an explanation was given by one student—the more knowledgeable other. Furthermore, the students did not attempt to probe one another on the 'nitty-gritty' of the content of their studies. They seemed happy with the questions they asked and the answers they received. We concluded that the reason for this was that the discussions did not follow the 'deep learning' principles and lacked depth. Although the administrative part of the module was helpful, attempts could have been made by more knowledgeable people to assist so that deep learning could happen. In this context the more knowledgeable people would be lecturers and tutors. Cho and Cho (2016) observed that the failure of tutors' or lecturers' use of scaffolding leads to low quality online interactions. Hence the importance of providing support at the earlier stages of online interactions followed by the implementation of scaffolding strategies to promote learner autonomy.

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One of the visible characteristics of deep learning was students' motivation of one another towards the examinations and assignments. While some students lamented about low assignment marks, others became a shoulder to cry on. Interestingly, the topic of marks, assignments, and examination were shared by all twenty students, and the tone in their interactivity indicated seriousness, authenticity, and cooperation.

The last concept to be examined under Phase 1 was meaningful learning. One of the characteristics of this concept is when students can identify their learning goals and are aware of their progress towards actively achieving them. Like deep learning, this characteristic was not very visible in the data. The only evidence for meaningful and constructive learning was found in students' reflections on their examinations. Eleven of the twenty students reflected on the hard and easy parts of their examination, as well as the time given. Some even went further to request past papers from others which was a sign of intentional learning.

## *Phase 2*

Data collected during this phase showed that the students had evolved into a different form of interaction that involved forming WhatsApp groups outside their LMS, and the bulk of the discussion happened on that platform. The students seemed less interested in discussing either the administrative elements of the module or the academic part as before. This finding corroborates Van Wyngaard et al. (2016) and Nsamba and Makoe (2017) who found that WhatsApp was a more preferred learning platform at the university. Could this be the first sign that the students 'may be losing motivation' (Simpson 2013: 13) and are less inclined to visit their university's LMS?

One of the most amazing revelations from the data was the strong sense of motivation to learn. It was clear that the student-student interactions were a source of motivational support. This finds support in Simpson (2013), who emphasised that it is imperative for DE teachers to enhance students' learning motivation. Lubbock (1894, cited in Simpson 2013:13) expressed this issue succinctly: 'Every child should be given the wish to learn'. Indeed, Phase 2 findings showed minimal characteristics of deep and meaningful learning except the desire to join a study group and responding to such calls. Deep learning characteristics such as knowledge construction, integration, and discovery learning were not visible in the discussions.

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## **Conclusions and recommendations**

The three interactions are very essential in providing learning support in distance education institutions. Student support has been found effective in minimising the transactional gap (Moore 1993), enhancing student development (Shaheen et al. 2020), and retaining students (Simpson 2013). As early psychologists observed, student support such as social interactions can lead to cognitive development, improvement of language skills, and the enhancement of learning in general.

This study focused on student-student interactions to determine their quality and effectiveness in enhancing deep and meaningful learning. While this method is essential in minimising isolation and elements of demotivation among DE students, it was found that student-student interactions were not the most effective method of enhancing deep and meaningful learning. The findings of this study therefore do not support Anderson's Thesis 1. As revealed by the data, deep and meaningful learning is not possible without lecturer support. As noted by Rodriguez and Armellini (2015), offering only one type of interaction can lead to students' disengagement and confusion. In DE, student-student and student-teacher interactions are inherently low, therefore, withdrawing

one of these two important support services will increase the DE transactional gap. It is therefore recommended that all three types of interactions should be provided at high levels to achieve deep and meaningful learning, as well as the fulfilment of students' experiences.

Given the importance of student-student interactions in building online learning communities, developing problem-solving and critical skills, supporting productive and satisfying learning (Kolloff 2011), and enhancing motivation, constant evaluation of the number of interactions, their combinations, and the correct characteristics of those interactions is required. Therefore, a framework for analysing interactions to determine the quality in all learning environments has been suggested. Furthermore, as the aim of this study was to test the equivalency theory, more research is needed to understand the right combination of interactions in DE universities, especially when using different technologies.

## References

- 218 Alexander, R.J. 2006. *Towards Dialogic Teaching*. 3<sup>rd</sup> ed.) New York: Dialogos.
- Anderson, T. 2003a. Getting the mix right again: An updated and theoretical rationale for interaction. *International Review of Research in Open and Distance Learning*, 4(2). Available at: <https://doi.org/10.19173/irrodl.v4i2.149>
- Bandura, A. 1977. *Social Learning Theory*. Englewood Cliffs, N.J: Prentice Hall.
- Berry, M. (2012). Meaningful Learning and ICT. Available at: <http://milesberry.net/2009/09/meaningful-learning-and-ict/>
- Bernard, M.R., Abrami, P.C., Borokhovski, E., Wade, C.A., Tamim, et al. 2009. A meta-analysis of three types of interaction treatments in distance education. *Review of Educational Research*, 79(3): 1243–1289
- Blocher, J.M. 2005. Increasing learner interaction: Using jigsaw online. *Educational Media International*, 42(3). ISSN 0952-3987.
- Burbules, N.C. and Bruce, B.C. 2001. Theory and research on teaching as dialogue. In: *Handbook of research on teaching*, 4<sup>th</sup> ed., edited by V. Richardson (ed.). Washington, DC: American Educational Research Association.
- Cabral, B.P. (2012). Interaction equivalency theorem and design of online courses – A preliminary research proposal approach. EDEN 2012 Annual Conference, Porto, Spain. Available at: <http://prezi.com/eokpvy3ijbts/interaction-equivalency-theorem-and-design-of-online-courses-a-preliminary-research-proposal-approach/>

- Grabe, M. and Grabe, C. 2007. *Integrating technology for meaningful learning*. 5<sup>th</sup> ed. Boston, MA: Houghton Mifflin.
- Hermida, J. 2009. Strategies to promote a deep approach to reading. *Tomorrow's Professor Digest*, 31(3)b.
- Jacobs, G.M. and Ivone, F.M. 2020. Infusing cooperative learning into distance education, 24(1). Available at: <http://www.tesl-ej.org/wordpress/issues/volume24/ej93/ej93a1>
- Johnson, D.W., Johnson, R., Stanne, M.B. and Garibaldi, A. 1990. Impact of group processing on achievement in cooperative groups. *Journal of Social Psychology*, 130(4): 507-516.
- Jonassen, D.H. 2007. A Taxonomy of Meaningful Learning. *Educational Technology*, 47(5): 30-35, 171-173.
- Kelsey, H.S. and D'Souza, H. 2006. Importance of learner-learner interaction in distance education, 4(46). Available at: <http://isedj.org/4/46/>
- Kolloff, M. 2011. Strategies for effective student/student interaction in online courses. 17<sup>th</sup> Annual Conference on Distance Teaching and Learning, Wisconsin, USA.
- Kupczynski, L., Mundy, M.A. and Goswami, M.V. 2012. Cooperative learning in distance learning: A mixed methods study. *International Journal of Instruction*, 5(2): 81-90.
- Majeski, R. and Stover, M. 2007. Theoretically based pedagogical strategies leading to deep learning in asynchronous online Gerontology courses. *Educational Gerontology*, 33(3). Available at: <https://doi.org/10.1080/03601270600850826>
- Miyazoe, T. 2009. *LMS-based EFL blended instructional design: Empirical research on the sense of class community, learning styles, and online written interaction*. Ph.D. thesis, International Christian University, Tokyo.
- Miyazoe, T. and Anderson, T. 2010. Empirical research on learners' perceptions: Interaction Equivalency Theorem in blended learning, with Terry Anderson. *European Journal of Open, Distance and E-Learning*, 9(2): 94-104. Available at: [www.ncolr.org/jiol](http://www.ncolr.org/jiol)
- Moore, M.G. 1989. Editorial: Three types of interaction. *The American Journal of Distance Education* 3(2): 1-7. Available at: <http://dx.doi.org/10.1080/08923648909526659>
- Moore, M. 1990. Recent contributions to the theory of distance education. *Open Learning*, 5: 10-15. Available at: <https://doi.org/10.1080/0268051900050303>
- Rhode, J.F. 2009. Interaction equivalency in self-paced online learning environments: An exploration of learner preferences. *International Review of Research in Open and Distance Learning*, 10(1): 1-23. Available at: <http://dx.doi.org/10.19173/irrodl.v10i1.603>
- Ritchie, J. and Lewis, J. 2003. *Qualitative Research Practice*. London: Sage Publications.
- Roblyer, M.D. and Ekhaml, L. (2000). How interactive are YOUR distance courses? A rubric for

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- assessing interaction in distance learning. *Online Journal of Distance Learning Administration*, 3(2). Available at: <http://www.westga.edu/~distance/ojdla/summer32/roblyer32.html>
- Shearer, R. 2010. Transactional distance and dialogue. 26<sup>th</sup> Annual Conference on Distance Teaching and Learning, Madison, WI: Board of Regents of the University of Wisconsin System.
- Simpson, O. 2013. Student retention in distance education: Are we failing our students? *Open Learning: The Journal of Open Distance and e-Learning*, 28(2): 105–119. doi:10.1080/02680513.2013.847363
- Snyder, H. 2019. Literature review is a research methodology: An overview and guidelines. *Journal of Business*, 104, 333-339. Available at: <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Swan, K. (2002). Building learning communities in online courses: The importance of interaction. *Education, Communication & Information*, 2(1): 23–49.
- Taylor, B., Kermode, S. and Roberts, K. 2006. *Research in Nursing and health care: Evidence for practice*. South Melbourne, Vic: Thomson.
- UNISA. 2016. *Annual report*. Pretoria: UNISA.
- Vygotsky L. 1978. *Mind in Society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Zawacki-Richter, O., Backer, E. and Vogt, S. 2009. Review of distance education research (2000 to 2008): Analysis of research areas, methods, and authorship patterns. *The International Review of Research in Open and Distributed Learning*, 10: 21–50.
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