Learner Diaries in Classroom Research:

Beginnings of a Complexity Perspective

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Abstract

This paper attempts to connect the areas of classroom research, diaries as tools for data collection, and complexity thinking. The article draws upon two recently published examples of diary studies into language learning classroom environments, and endeavours to examine critically strengths and weaknesses of the two studies from the perspective of both general thinking about educational research and research conceptions based upon complexity thinking approaches. The article looks at the use of diary studies for classroom research in four areas: data collection techniques, data analysis techniques, soundness of study, and the drawing of inferences and conclusions. Through such an examination, points to be taken into consideration for the effective use of diaries to study the complexity of language learning classrooms emerge.

Human life is complex, made up of an infinite number of systems that are intricately interrelated and merged with each other. As such, simple linear cause and effect concepts are questionable. Each individual human agent has an individually created history that is emergent, as innumerable other factors, including other individual human histories, interact to create lived experience for the individual. Rather than being able to think of *threads* of individual human experience, we might better conceive of *webs* of experience that come together through the interactions of human agents. Furthermore, the feedback that human agents receive from interactions form possibilities for future actions whilst at the same time creating new conditions for new interactions.

Regarding the school environment, the classroom environment might be seen as a particular system, made up of individual human agents that happen to be in that context. However, the classroom is not an island, and indeed all of the individual agents are not separate in their existence – they are, and are part of, numerous other systems, just as the classroom environment on that day, at that time, with those members is merged dynamically with any number of other systems.

If we understand the world to be composed of complex systems in constant interaction with levels above and below, the study of such systems requires a select focus upon one dimension (van Geert, 2008). Classroom research provides a detailed examination of the multiple influences between environmental and learner factors, and has the potential for insights into both emerging changes in the learner and the classroom environment (Dörnyei & Ushioda, 2011). In pursuing the possibility of drawing upon complexity thinking in alignment with classroom research, study into the ways in which the dynamic system of the classroom both affects the agents it comprises and is affected by these agents

might be enabled. However, study into human systems drawing upon complexity thinking is based upon a recognition that what is happening through the research changes systems at various levels – there can be no objectivity in a purely scientific sense, because human systems are too complex and co-adapt to each other (Davis and Sumara, 2006). Furthermore, the study of human complex systems requires an understanding that:

> Imperfectly intelligent agents can never perfectly comprehend their environment on account of its infinite range of possibilities, and because the environment is always changing by virtue of the adaptive orientation of other agents, and hence is unknowable (Mason, 2008, p. 44).

Learner diaries

One method for conducting research at the classroom level into student perceptions of the complex learning environment is through the use of learner diaries, and it is anticipated that the further use of diaries as a form of data for educational research might broaden qualitative studies (Richards, 2009). As a form of introspective data collection, diaries in classroom research might "take us to a place that no other data collection method can reach – into the mind of the learner or teacher" (Nunan & Bailey, 2009, p. 307). By eliciting data from agents in the classroom system, whilst also looking at the system itself on any particular day and across days and weeks, we might get a more meaningful picture of the dynamic conditions that came together to form the learning space of the classroom at those times.

As such, this paper will critically review two published articles from the field of language learning that

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made use of diaries for data-collection purposes. Firstly, a concise outline of the studies from the two articles is presented. Following, the paper will examine the articles in the following four areas: data collection techniques, data analysis techniques, soundness of study, and the drawing of inferences and conclusions. Through a critical discussion of the ways in which reports of the two studies differ and align, drawing upon both general theory of educational research and complexity approaches, it is hoped that the possibilities offered by the practical and effective use of diary studies in classroom educational research might be furthered.

Outline of the studies

	Study 1: Porto, M. (2007). Learning diaries in the English as a Foreign Language classroom: A tool for accessing learners' perceptions of lessons and developing learner autonomy and reflection. *Foreign Language Annals, 40*(4), 672-696.
Purposes / Research Questions	Use of diaries as a tool for teachers to become better aware of student experience of language-learning lessons, & for fostering learner autonomy / reflection. RQ1: How did learners perceive their foreign language learning experiences, as revealed in their diary writing? RQ2: How did learners' written reflection in the diaries contribute to developing learner autonomy in this setting?
Context	Argentina; University students (19 – 21 years old); English teaching / translating majors; 1 year; 90 diarists; mostly female participants; researcher was teacher of classes
Data collection	Spanish / English data; data set of entries from consenting students; learning journal as part of course; free-writing (no prompts); writing 30 minutes at end of lesson; diaries collected at end of lesson.
Data analysis	Macroanalysis: read / reread all diaries several times to obtain holistic sense, keeping informal notes. Compared notes with own diary about lessons to connect context. Microanalysis: Searched for key words, critical incidents. Made categories & developed context to support categories. Made coding system based on themes from data, and a priori themes from existing literature. Coding: Marking comments in diaries and placing in appropriate categories, searching for negative cases, collapsing / regrouping categories. Triangulation: Revisited whole data body repeatedly, use of external raters, discussion with external raters to resolve conflicting ideas about coding / categories. Frequency of mention statistics presented

Soundness	Discusses reasons for data collection methods / possible limitations; use of external raters to check biases; written in 1st person

	Study 2: Huang, J. (2005). A diary study of difficulties and constraints in EFL learning. *System, 33*, 609-621.
Purposes / Research Questions	Use of diaries as a tool to better allow teachers to become aware of student beliefs / concerns regarding learning difficulties. RQ1: What are learners' perceptions of difficulties and constraints in EFL learning in the Chinese university context? RQ2: How do learners respond to the perceived difficulties and constraints in EFL learning?
Context	China; University (teacher's college) 2nd year students; English majors; 1 semester (18 weeks); 3 classes (38 students each); data set of 352 entries from 72 diarists; researcher was teacher of classes.
Data collection	English data; data set composed of entries from students who consented to use of entries; learning journal as part of course.
Data analysis	Review of complete data set to allow dominant themes to emerge (from 352 entries); narrowed to 84 entries by 57 students that were longer and more substantial; content analysis – counting explicit mentions of difficulties, grouping themes into categories; insights from observation, informal interviews used to enhance data interpretation; frequency / distribution of mention statistics presented; minority themes presented.
Soundness	Discusses weakness of analysis technique; written in the main in 3rd person

Data Collection Techniques

To begin the discussion by looking at data collection techniques, it becomes obvious upon reading the two articles of a difference in focus placed upon exposition of methodology. Huang's (2005) article provides a very brief account of contextual details and methodology involved in the study, placing emphasis on findings; in contradistinction to this, Porto's (2007) article goes into great detail about both methodology and findings. This may be due in part, as Yates (2004) has discussed, to word limits of the two journals imposing restrictions upon just how much detail can be

rendered. Resultantly, it is perhaps unfair to compare the two articles in this regard, although one does feel that the degree of depth presented by Porto adds to a sense of the soundness of the study.

The theoretical orientation of a researcher, their own ideological position, links to numerous other areas of necessary choice in research design, including choice of methodology (Mertens, 2005; Moore, 2004). Other writers also include further aspects to choice of methodology, such as consideration of field, situation and what is to be studied, and political aspects such as what form of research or representations are currently considered as 'proper' (Dornyei, 2007; Yates, 2004). Greene, Kreider, and Mayer (2005) discuss three different positions in relation to selection of data collection tools: *a-paradigmatic* approaches deem that the context, rather than philosophy, ought to determine practice; *dialectic* positions assert that fuller, more insightful perspectives are gained through a mix of philosophies; and finally *pragmatic* stances de-emphasize philosophical traditions and position them as neither beneficial nor problematic. Moriarty (2004, p. 150) urges that before data collection begins, researchers ought to "put themselves into the shoes of the participants and try to anticipate how they might perceive the researchers' intentions." Perception of intentions will also clearly be formed by the data collection techniques that the researcher intends to employ.

Such understandings speak to a pragmatic way of thinking about collection techniques. Huang's (2005) article expresses little sense of any consideration of ideology connected to data collection, and as such it is difficult to draw any conclusions as to upon what basis the particular data collection technique was chosen. On the other hand, a feel for the ideological positioning of the researcher comes through to a greater degree in the writing of Porto, as she discusses the reasons behind her choices. Porto's (2007) article contains explicit reference to such thinking, in stating that one of the purposes of using diaries was to "help learners act more intelligently and skillfully, becoming researchers of their own learning" (p.677). Details such as this in the writing of Porto allow the reader to not only judge why the data collection method was chosen, but also show a clear consideration of how participants might perceive the research (Moriarty, 2004).

The use of introspective methods of data collection, such as diary studies has been criticized from the perspective that it is difficult to determine the degree to which entries fully represent the perceptions of participants (Dornyei, 2007; Nunan & Bailey, 2009). Furthermore, Hall (2008) writes of the dangers of utilizing data collected in the second language of participants, as the capacity of participants to write what they truly think is determined by their level of second language capability. As a result, the data received in the studies of both Huang (2005) and Porto (2007) is open to this criticism, as in both cases the data were collected in a language foreign to the participants. However, Porto (2007) discusses the choice afforded to learners to write in Spanish (their native language) or English (a foreign language), but that students in the main chose to write in English. Equally, as a purpose of the study may have been to assist students with their English, the very process of diary writing itself, if

directed to be done in the students' native language, may give students the impression that their second language ability is not valued. As such, a rationale for the diary writing becomes very important – if it is for language learning, then directions to participants to write in their second language writing might be used, but as data for research, entries are open to the criticism that Hall (2008) puts forth.

Both studies made use of longitudinal designs, Huang's (2005) for one semester, and Porto's (2007) for the span of an entire year of study. The use of such designs has been argued as the default choice in studying dynamic processes such as human learning or social change (Dornyei, 2007). As Horn (2008, p. 133) asserts in educational research that might draw upon complexity thinking:

> The study of learning communities as self-organizing systems offers an opportunity to understand the conditions that are in place when phase transitions occur. This, of course, does not allow us to predict the exact timing or consequences of particular transformations, but it does give us good clues about the appropriate parameters for the likelihood of subsequent phase transitions.

As such, the use of longitudinal designs in both studies, particularly as they are focused upon learner perceptions and responses to those perceptions, allows them to capture change as it happens as part of the classroom learning environment. Such study may provide glimpses of the conditions in place in the classroom environment at points of significant change, as well as detailing how change occurs gradually over time in the system. However, the articles reveal differences in the degree of soundness that might be connected to this use of an extended period of study (see section on soundness below).

Data Analysis Techniques

Whilst methods of collection of data are of obvious import, it is through the analysis of this data that it becomes meaningful as new knowing. Analysis involves the "systematic search for meaning…so that what has been learned can be communicated to others" (Hatch, 2002, p. 148).

However, research with human systems involves the interaction of an 'I' in relation with other 'I's' (McNiff & Whitehead, 2011, p. 30), embodying knowing as a process through these interactions. As Reason and Bradbury (2006, pp. 9-10) write, stressing the progressive form of 'knowing' in comparison to the noun 'knowledge,' "knowing is not a thing, to be discovered or created and stored up in journals, but rather arises in the process of living, in the voices of ordinary people in conversation" and "as the everyday practices of acting in relationship." In human research considered from a complexity perspective, the researcher is recognized as part of the whole process – there can be no objectivity in a purely scientific sense, because human systems are too complex and co-adapt to each other (Davis & Sumara, 2006). Kuhn (2007a, p. 172) contends that a complexity thinking approach to research with human systems sees reality as "dynamic, self-organizing, and emergent. It is both singular and multiple at the same time, and although 'it' may be studied from various perspectives the act of study will affect the 'reality'

observed." Similarly, "not only are the knower and the known dynamic, self-organizing and emerging, the relationship of the knower to the known is likewise dynamic, self-organizing and emerging" (Kuhn, 2007b, p. 173). There is no one simple answer, but a range of ways of knowing (McNiff & Whitehead, 2011), and the representation of this knowing is ultimately subjective.

McDougall (2004) writes of the necessity in human research to make explicit in what ways the researcher might be influencing the process of the research. In qualitative research, this implies the degree to which the voice of the researcher comes through as an integral part of the research. In regard to the two articles under discussion here, Porto's voice clearly comes through as she uses the first person 'I' throughout. In contrast, Huang's voice is muted by a more formal, basic research report writing style, utilizing in the main the third person. One wonders, once again, as to the degree to which restrictions placed upon the writers by the styles of the two journals involved affects the end articles produced.

Harreveld (2004), writing on the positioning of the researcher in the research process, warns of the dangers in analysis of qualitative material of imposing the researcher's own meaning rather than that of the participants. As qualitative research analysis essentially uses the researcher as a filtering device (Dornyei, 2007; Harreveld, 2004), there is the possibility that the researcher will see and report only what the researcher wants to see and report, whether intentionally or otherwise. The fear of this failing is recognized by Porto (2007), who attempts to counter any effects of bias through employing the use of external raters at the analysis stage. Huang's (2005) report leaves the reader with more questions than answers. In the section reporting upon methods of data analysis, whilst it is written that "28 of the longer and more substantial entries were selected from each class's set of journals for more detailed analysis" (Huang, 2005, p. 612), there is no discussion as to why these entries were selected by the researcher, and resultantly no explication of any bias that may have led to such selection or analysis.

Qualitative data analysis, and the presentation of qualitative material, involves detailed description of a variety of elements of the participants' world in order to "give readers the experience of 'being there'" (Somekh, Burman, Delamont, Meyer, Payne & Thorpe, 2005). In contrast to quantitative traditions, it is thought that the world experienced by participants, and conveyed in data, cannot be reduced to numbers (Hatch, 2002). With regards to the use of diaries as data, Sa (2002) asserts that there is a necessity to give contextual information or perceptions linked to those conveyed in diary entries to give background to the meanings that have been constructed by participants. This is to say, there is a need for "facts, actions and actors" to be "appropriately connected in their natural context in order to describe the teaching and learning flow as it happens" (Sa, 2002, p. 155). The necessity for a detailed consideration of the 'environment' is also part of a complexity thinking approach to research, in that the environment and system are merged and constantly in interaction – one cannot remove the system from its environment and try to ascribe meaning in such a

vacuum (Davis & Sumara, 2006; Haggis, 2008). This degree of consideration of the environment is explicitly evident in Porto's (2007, p. 680) attestation that during macroanalysis of data she compared notes and comments she had taken that "forced [her] to look for explicit links between the learners' comments and [her] own interpretations of them" and "identified supporting categories that provided the context in which each category occurred." Furthermore, Porto's (2007) discussion of findings clearly place the themes and categories discussed into a context giving meaning to the perceptions of participants through a thick description of events over time. In contrast to this, Huang's (2005) discussion of context is limited to a standard explication of details of participants, and the section detailing findings contains no thick description giving a narrative to the lived experiences of participants.

As mentioned above, there is an undertaking in qualitative approaches that meaning cannot be evidenced in the simplistic use of numbers. Hatch (2002, p. 9) writes that "qualitative data are objects, pictures, or detailed descriptions that cannot be reduced to numbers without distorting the essence of the social meanings they represent." However, Onwuegbuzie and Daniel (2003) argue that qualitative categories or themes are basically numerical, and that the provision of counts of effect sizes might allow the reader of qualitative research to determine somewhat objectively the subjective adjective that best describes the phenomenon depicted. Both of the studies discussed here make use of numbers to some degree in the presentation of analysis of data, mostly to show the degree to which certain themes or categories were mentioned. However, there may be the need to find some middle ground, whereby the use of numbers in deciding what is a major or minimal theme might be recognized and written about by the researcher in presentation of findings, but the numbers themselves presented in such a way as to not become the main focus – as this would take away and simplify what are in fact perceptions of a human agent in a complex system. In this sense, Huang's (2005) presentation of effect counts as appendices, whilst spatially removing the data directly from the presentation of findings, might assist the reader in focusing more upon qualitative aspects, in comparison to Porto's (2007) presentation of such numbers in the body of findings.

Soundness of study &
Drawing inferences, reaching conclusions

The area of the degree to which a study might be considered sound is a quagmire of terms that are mixed and merged, divided and re-combined across different approaches to research and ideologies. In quantitative studies, the terms of reliability – the degree of stability of measurements – and validity – whether the data answer the research question – are frequently applied to judge the soundness of a study (Lewin, 2005). On the other hand, qualitative research sees a multitude of quality criteria proposed, such as Lincoln and Guba's (1985) 'trustworthiness,' further divided into credibility, transferability, dependability, and confirmability; Maxwell's (1992) qualitative validity taxonomy of descriptive, interpretive, theoretical, evaluative validity and

generalizability; or Herr and Anderson's (2005) approach to soundness of action research with the concepts of outcome, process, democratic, catalytic, and dialogic validity. As both of the studies under consideration in this paper concern language learners, perhaps the most pertinent description of strategies to determine soundness of qualitative research in the area of applied linguistics comes from Dornyei (2007). Table 1 below sets forth necessary elements of sound qualitative study proposed by Dornyei (2007, pp. 59-62), and the degree to which each of the two studies discussed in this paper conform to these criteria.

Necessity	Porto (2007)	Huang (2005)
Leave an audit trail	☑ Clear explication of choices regarding research	✕ Extremely little detail regarding choices
Use contextualiz ation & thick description	☑ Detailed weaving of context – narrative of changes	✕ Threadbare description & only brief discussion of context
Make explicit potential researcher bias	☑ Detailed reflection	✕ No mention
Examine outliers / alternative explanations	☑ Both included in tables & discussed in theory-building	– Included in tables, but not discussed in detail
Undertake participant / peer checking	☑ Use of external raters to check emergent themes, participant-checking of themes	✕ No mention
Use method / data triangulation	☑ Triangulation through participant / external rater checking	☑ Very brief mention of use of classroom observation and informal interviews
Use prolonged engagement	☑ Longitudinal (1 year)	☑ Longitudinal (6 months)

Table 1: A cross-analysis of study soundness

As might be evidenced from Table 1, there are clear and easily identifiable differences in the soundness that might be perceived from the presentation in articles of the two studies. With regards the necessity for prolonged engagement, whilst both studies use such an approach, Porto (2007, p. 677) goes further by also leaving a clear audit trail:

> The study was extended for the whole year for two reasons. First, participants had never written learning diaries before. Time was fundamental to overcome their unfamiliarity with the procedure…Second,

> diary writing over time offers deeper insights into learners' perceptions of their learning experiences."

Equally, Porto reflects upon her bias: "I am conscious that there may be other ways of hearing my students' words and actions" and I "imposed a structure that reflected my own questions, theories, and world view" (p. 692), and took steps to counter such bias through the use of external raters and participant checking (My current personal view of this is that in complex classroom research, participant checking is a more valid form of checking bias, as the checkers are internal to the system under study, and have been part of the conditions of that system. In comparison, the use of some person removed from the direct context of the study to check themes, whilst perhaps providing an objective view, lacks complex validity as the person has not been part of the conditions of the system, and cannot possibly relate context to what has been written in a diary entry). In contrast, Huang provides neither discussion of bias nor of attempts to counteract such factors, and in doing so reduces the soundness of the study by not making explicit the positioning of the researcher (Moore, 2004). Equally, Porto (2007) gives a rationale for her use of external raters, providing the study with a degree of triangulation; Huang (2005) makes brief mention of triangulation: "To enhance data interpretation, insights from classroom observation and informal interviews are also drawn on occasionally" (p. 612), but does not make clear in discussion of findings any use of these classroom observations or informal interviews.

The validity of diaries as sources of data has also been questioned due to problems of recall (Hall, 2008; Nunan & Bailey, 2009; Dornyei, 2007). Whether diary entries truly reflect the experiences or perceptions of participants during lessons might be influenced by myriad variables, including time-lapse between the experience that is focused upon and writing of entry (Hall, 2008). Porto's (2007) study deliberately set out to work on this area by allotting time at the end of each session for diary writing. On the other hand, Huang's (2005) article contains no mention of when diary-writing was conducted, making it impossible to judge the degree to which problems of recall might have affected responses. From a complexity perspective, it is natural that participants' ideas might change dynamically, and this is not necessarily a weakness, but there is a necessity to make explicit as many of the potential influences as possible in order for the reader to be able to make judgments as to the soundness of data, and the conclusions that might be drawn.

Finally, from a complexity perspective, data received from participants or from observation will have been influenced by the myriad different systems of which these individuals are part. Despite information being collected from individual students, it is at the classroom level that any data must be analysed in a complexity sense. Consequently, rather than being able to say generally that *students changed*, from a complexity viewpoint, what is actually researched and analysed are the ways in which the *classroom environment* encourages students to note certain things (Haggis, 2008). At the same time, cause and effect relationships cannot be drawn, as there are just too many different systems of which human individuals are part to make such simplistic linear claims, or generalizations. Yates (2004, p. 3) asserts that:

In the case of education research, its objects of study (people, cultures, national systems) are not timeless objects where a finding at one particular time can be assumed to hold in the same way at another place or at another time when different contexts hold.

The claims made by the researcher have obvious links to the soundness of the study as a whole. Once again, whilst both articles make no mention of complexity thinking as an ideology upon which they were based, the article by Huang (2005) shows little apparent account of the complexity of which the learners are part. In conclusion, not only does Huang (2005) simplify cause and effect, arguing that the diaries of students "reveal that their linguistic difficulties might be a product of the relationship between their linguistic competence and the demands that examinations … placed on it" (p. 617), but also generalizes to make suggestions for the entire Chinese university setting (pp. 617-618). In juxtaposition to this, Porto (2007) clearly contends that "because the participants represented particular combinations of background experiences and language learning abilities, it is impossible to be sure whether the findings reported here would extend to other populations and other institutional conditions" (p. 692). Such recognition is more in line with both complexity thinking (Davis & Sumara, 2006; Haggis, 2008) and qualitative educational research in general (Hatch, 2002).

Conclusion

As might be witnessed from the discussion above, not only is the language learning classroom a complex environment, its study is also influenced by a range of factors. In attempting to cross-analyse the two published examples of diary studies examined here, it becomes apparent that the representation of research in its disseminated form is affected by a myriad of elements peripheral to the actual research itself. Whilst it is asserted here that the use of diaries to study the language learning classroom meshes in complement with complexity thinking, what emerges from the discussion is that researchers, as far as possible, ought to attempt to make explicit in any report the complexity of which they themselves are part. Learner diaries might indeed give insight into the ways that environmental factors and learner-internal factors interact, but if the researcher's positionings and motives for choices in the research are also not made clear, it might detract from the capacity of the reader to gain a clear image of the dynamic research process.

Note

[1]Portions of this manuscript draw upon Sampson (2011).

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