http://e-flt.nus.edu.sg/

Electronic Journal of Foreign Language Teaching
2007, Vol. 4, No. 1, pp. 140–148

What Role do Digital Media Play in Autonomous Learning? Reflections on Moral Philosophy and Education, with Special Reference to the Educational Value of Digital Media

Udo Ohm
(udo.ohm@uni-jena.de)
Friedrich-Schiller-University Jena, Germany

Abstract

This article examines the question: what kind of effect digital media can have on the learner and the learning process? In this context, the term autonomous learning has become of special interest. Determining learning as "autonomous" directs the focus of attention to the basic question of education in light of the use of technological media: what should a technologically constructed medium be like, if it is not to turn the learner into an object of learning, but rather to permit him to utilize media as a free, self-determining subject? In this article, several kinds of digital media will be discussed with reference to the Kantian concepts of "will," "imaginative power," and "sociability." Among these are programs of the computer-as-tutor approach, tools for data-driven and inquiry-based activities, and tools for online-activities. It is found that especially the internet, with its opportunities for people to participate in real social practice, offers the chance to appreciably enhance the agency of individual learners and their willingness to engage in learning activities.

1 An anecdotal approach to autonomous learning

Legend has it that Archimedes was at home stepping into his bath, lowering his body into the water, when it occurred to him that there was a solution to a problem that had occupied his mind for some time. All of a sudden, a thought struck him: The volume of his own body – and of any other types of bodies – could be measured by the amount of overflow of water. The amount of overflow is equal to the weight of water and is understood as a power in action which forces the body to rise, i.e. buoyancy, and thereby makes it appear proportionately lighter (Archimedean principle). The story goes on to state that Archimedes jumped out of his bath, ran out into the street without his clothes on, and announced his fortunate discovery as "Eureka" (I found it!) to the citizens of Syracuse1.

What parallels can be drawn between the above story and the topic of this article? First, without a doubt, this is a story about autonomous learning. Archimedes' learning took place without instruction and without outside help. Second, Archimedes used media. He used a full bath tub and immersed his own body. Third, when he had understood the principle of static buoyancy he ex-

perienced joy. Supposedly, this feeling of intense delight was immediately connected to a long lasting search for the solution to his problem.

2 Topic and argument

This article examines the question of how digital media can be made instrumental, or what kind of effect digital media can have on the learner and the learning process. A fact of special interest is that by the very existence of digital media, the learner has already been exposed to what is referred to as "autonomous learning." This assumption can not only be seen in certain software products, but is also suggested in the expectations frequently mentioned by teachers, learners, and at institutions of (higher) learning[2]. And finally, digital media and their potential for autonomous learning have often been mentioned in pedagogic literature.

The effect of media and teaching methods cannot be discussed without stating what is meant by learning in this context. First, I will discuss the term *autonomous learning* (section 3). In my opinion, this term designates neither a new, nor a special way, of learning. However, if we determine learning as "autonomous", we can direct the focus of our attention to the basic question of education in light of the use of technological media: What should a technologically constructed medium be like if it is not to turn the learner into an object of learning, but rather to permit him or her to utilize media as a free, self-determining subject? In section 4, I will discuss learning programs of the computer-as-tutor approach. Although these programs give a great deal of control over their various elements, they only have a limited capacity for autonomous learning. In section 5, beginning with Kant's concept of imaginative power in his *Critique of the Power of Judgment*, I will introduce the concept of learning in terms of "imaginative re-creation." According to Kant, learning is not merely the borrowing, or repetitive substitution, of knowledge that is already available. It should rather be seen from the standpoint of the learning subject, and must be regarded as the gathering of original knowledge or the re-creative reconstruction of the learning object according to the learner's grasp of knowledge. In section 6, the social dimension of autonomous learning will be given some attention. It will be argued that the degree of a learner's agency has great impact on autonomous learning. From this point of view, the Internet with its countless opportunities to contribute to and to participate in meaningful action provides the learner with a powerful means to take charge of his or her own learning.

3 Autonomous learning and the demands of moral philosophy

Representative definitions of (the learner's) autonomy are based on the idea that actions are controlled by personal responsibility. In the context of learning foreign languages, Holec defines autonomy as "the ability to take charge of one's own learning." For the learner, this means, "to have, and to hold, the responsibility for all the decisions concerning all aspects of learning." This definition is followed by an enumeration of the most important aspects of foreign language acquisition (Holec, 1980, pp. 3–4). According to Little, people are autonomous "in relation to a particular task when they are able to perform that task (i) without assistance, (ii) beyond the immediate context in which they acquired the knowledge and skills on which the successful task performance depends, and (iii) flexibly, taking account of the special requirements of particular circumstances." (Little, 1999, p. 22).

It seems to me that the chances of autonomous learning, as described in these and other definitions, are simply postulates. The question which is *not* raised is: under what conditions does the learning process take place? If we are interested in an approach that rests on a solid foundation, as with the educative function of the autonomy of learners, we cannot avoid questioning the postulated ability of learners to act without restraint. Naturally, in the framework of an essay, initial reflections can be provided, and these have to be considered under the specific aspects of the questions being asked. My own reflections will be orientated towards Kant's concept of autonomy.

In the *Critique of Practical Reason*[3], Kant deals with man's capacity for deliberative self-determination: "*Will* is a kind of causality of living beings insofar as they are rational, and *freedom*

would be that property of such causality that it can be efficient independently of alien causes *determining* it"[4] (Kant, 1785/1996, p. 94). But, where there is causality, there will also be a cause for an effect. Because, according to Kant, will is subjected to a law, it must be determined by something, for that matter. Provided, however, that the will is free, it cannot be determined by something alien, by an outside effect. To put it differently, the will cannot be dominated by heteronomous external causes, but the will can only be dominated by an autonomous (self-determined) law: "What, then, can freedom of the will be other than autonomy, that is, the will's property of being a law to itself?"[5] (Kant, 1785/1986, p. 94). According to Kant, the will is regarded "as a capacity to determine itself to acting in conformity with the *representation of certain laws*."[6] (Kant, 1785/1996, p. 78).

It is in this very autonomy of the will that the essence of a person is revealed. For a person who determines his or her own actions is not only a means of causes external to himself or herself but also "*exists as an end in itself*"[7] (Kant, 1785/1996, p. 79). The well known categorical imperative simply states that a person does not only possess the capacity to determine his or her own actions by himself or herself, but that he or she also acts accordingly. The most revealing formulation regarding the problem of how learning subjects can be involved intermedially in the learning process in Kant's interpretation is: "*So act that you use humanity, whether in your own person or in the person of any other, always at the same time as an end, never merely as a means.*"[8] (Kant, 1785/1996, p. 80).

The reflections in this section of the paper can be summed up as follows: first, the essence of a person is determined by his or her capacity for autonomous actions. This implies, secondly, that the subjugation of persons to mechanical chains of effect should not be allowed. With reference to the utilization of media, according to Röder, the question which should be asked is this: Is it possible to create media which support the idea of the freedom of the subject, and if it is, how can this be done? (1998, p. 34)

4 The learner as the object of a digital medium

This section begins with a focus on the fact that many of the modern CD-ROM based language learning programs and online-modules ask learners to make their own selections and decisions[9]. Although these programs or modules are often highly interactive in nature, there is only little chance for learners to control their learning processes and the software is not even partially able to adapt to the learning behaviour of the users. In her review of the language learning software *Tell Me More Spanish*, Lafford, for example, on the one hand appreciates that the individual learners "are given a great deal of control over various elements of the program so that they can forge their own learning path." On the other hand, she criticizes that the language practice activities "do not seem to be communicatively motivated" and that they are "often decontextualized mechanical exercises" (2004, p. 32). The limited capacity of those programs to allow the learners to take charge of their own learning typically manifests itself in incomplete practice dialogs. In the *Tell Me More*-Series most of the interactions are reduced to "a series of short adjacency pairs […] that are loosely strung together around a central theme" (Lafford, 2004, p. 31). To put it with Leakey (2006), these programs remain weak, from the point of view of communication, "at the performance stage, where the limits of technology do not allow for anything more real than the simulated interactive dialogues."

In my opinion, the outlined weakness of learning programs or modules of the closed type is not restricted to the dialog portions, although it becomes particularly evident in these sections. Rather, it is a fundamental problem concerning the teaching design of media in the computer-as-tutor approach. To make a program work as a tutor, teaching instructions have to be determined beforehand in the educational design of the learning software. Therefore the expected activity of the learner has to be simulated, including a close check of the desired interactions between learner and software. Thus, the interactive nature of the software enables the learner to activate the teaching strategies integrated into the learning software, at any time and independent of teachers, sometimes

just by pushing a button. As a result, a technologically sophisticated learning program like Tell Me More with its "complex network of hierarchical infrastructure" (Lafford, 2004, p. 29) and tutoring tools may enable learners to "forge their own learning path" through lessons and exercises, but it is clear that their learning process remains determined by the teaching methods integrated in the software in advance[10].

To sum up the above, the interactions between learner and learning software cannot really be seen as activities of a learner who determines his or her own actions. The term "interaction" here only means a reciprocal effect in a technical or possibly in a psychologizing sense. In terms of the current article's concept of autonomy, we must state that the learner is not the subject of his learning process. Rather he is subjugated to mechanical chains of effect. Therefore, it is no wonder that the additional use of resources from the Internet "followed by oral feedback in a face-to-face context" is suggested as a possible way to overcome the lack of adequate contextualization and authenticity in the dialog section (Leakey, 2006; cf. Lafford, 2004, p. 31).

5 Learning as imaginative re-creation

In his *Critique of the Power of Judgment*, Kant discusses the human ability for intuitive judgment, i.e. the general understanding not to judge according to concepts, but to be able to judge before, or without, the formation of concepts. In its pure form, this human ability is shown in aesthetic reflection (e.g. works of art). So the aesthetic judgment must be understood as an additional source of knowledge. It is tied to the feeling of pleasure and displeasure (cf. Kant, 1790/2000, pp. 24–33, 75–78, 89–90). Therefore Kant also uses the term "judgment of taste" for this faculty of the mind (cf. Kant, 1790/2000, pp. 89¬–127). Looking back to the example of Archimedes, one may say that Kant simply deals with his observation that knowledge *in itself* is intertwined with pleasure (cf. Röder, 1998, p. 165). Pleasure, Röder argues, is the immediate expression of adequacy of knowledge referring to the cognitive faculty of the person which might assimilate the form of the object, rather than to the object itself (Röder, 1998, p. 166).

If the concept "autonomous learning" is to be retained, then (in my opinion) there appears an indication of an interesting perspective for a thorough foundation beyond the limits of moral philosophy. It follows that the learner's autonomy would be interlaced with his capacity for aesthetic judgment. This aesthetic judgment[11] can by all means justify commonly used criteria for the learner's autonomy (cf. section 3) as shown by Archimedes' example. What Archimedes learned not only occurred without outside help (1st criterion), he also learned how to use the means immediately available to him on his own (2nd criterion), and he was able to transfer this gained knowledge to new contexts which were different from the unmediated learning context (3rd criterion). In other words, he was able to work out the phenomenon in the abstract which, by the way, was his real achievement in science. But can we compare an extraordinary result in research with an ordinary process of learning? Following Röder's thesis (borrowed from Kant), the activity of the subject in the passing of judgment does not only concern the researcher's pursuit of exceptional knowledge in the sciences, but also every kind of learning should be understood as a broadening of the operative and the communicative capacities of subjects. That is why learning, understood as Archimedean acquisition of knowledge, would also be associated, per se, with a feeling of pleasure (Röder, 1998, p. 179).

For example, teachers who show students how to create Web pages in the Hypertext Markup Language (HTML), find that when learners take their first steps (however small) writing Web pages, they experience feelings of joy. For example, when the teacher explains (with the aid of *his* or *her* own PC) the HTML command for displaying an image on the Web page and shows this command's effect on an Internet browser, this may leave the learner *unmoved*. However, when the same HTML-command is integrated into the students' *own* HTML files on their *own* PCs, some learners will experience a burst of enthusiasm. We can be certain that Archimedes was also thrilled, but his understanding of the static buoyancy principle cannot, of course, be compared in its "objective" significance with the afore-mentioned learning event. From a subjective perspective, however, many similar cases can be found.

Papert (1994) reports on the learning endeavor of an elementary school boy who tried to make a drawing instrument, a robot designed as a turtle, draw his name on the floor. Because the turtle was connected to a computer it could be ordered around by giving instructions in the programming language Logo. The boy found it difficult to construct the letter "A" because he could not figure out the sizes of the angles and the length of the lines to draw. Only when he noticed a large equilateral triangle drawn with the turtle by another child, did he get a sudden inspiration. He realized that the top of the "A" could be seen as a triangle and that he just had to add on two extra legs at the triangle to get an "A". Here again we can see that a renewal of the subject matter for the learner has occurred. It was only by abstraction from the letter "A" as a whole that the boy was able to re-construct (for himself) the letter as a derivation from the basic geometric shape of a triangle. Following Kant, we may say that this was the outcome of an aesthetic judgment, i.e. a judgment before concepts, which was tied to the feeling of pleasure, as Papert indicates by characterizing the boy's delight over this discovery with an allusion to Archimedes' "Eureka" (1994, pp. 177–78).

It is also true in the case of Archimedes that the solution to his problem was not the only outcome of this acquisition of new knowledge. When he realized that there was a principle called buoyancy at work which would be valid for all types of bodies, there would be reason to assume that his way of perceiving the world had also changed. "Learning" that bodies immersed in a liquid, even his own body, behave according to the buoyancy principle, presumably changed his concept of the body. Consequently, a basic change in the way he perceived bodies occurred. The reason for this is that Archimedes had realized that bodies which are altogether different from each other have the property buoyancy in common. The fact is that fruitful learning is accompanied by pleasure and joy, and it can be evaluated, in the Kantian sense, as an indication that what has been learned is not adequate in relationship to some (objective) corpus of knowledge, but rather in relationship to the capacity for knowledge in a person (cf. also Papert's reflections on the sources of mathematical pleasure; Papert, 1993, pp. 190–207).

In this context, Heipcke uses the term "re-newal," which is caused by the learner. He states that each act of learning is an adoption of cultural content, and at the same time the renewal of the subject matter as well (Heipcke, 1983, p. 27). The subject matter is that which is at stake, and it is also a problem which must be overcome by the learner who integrates it, and also makes it part of his culture-specific knowledge. The above example of how Web pages are constructed shows that the subject matter has not already been acquired through the teacher's presentation of it, but rather the learner makes it his own through the *re*-discovery of the subject matter. This is mastered as a practical problem. Learning how to compose a Web page means a renewal of the subject matter for the learner. From then on, the many different, multicolored and animated pages of the World Wide Web (WWW) have one thing in common for the learners: they are all, at least in part, representations of the HTML code. The learners will also perhaps now regard the subject matter (the WWW and Internet), as well as the representation and visual design of information in a new light.

I would like to conclude this section with applications of the above reflections in the realm of foreign language learning and teaching with digital media. It is obvious that learning as reconstruction is virtually impossible with a learning software of the closed tutor-type. More promising seems to be the use of tools or technologies which support the learner in his endeavor to assimilate the object of learning. A classic tool for data-driven discovery of grammar rules and word meanings in the target language is the concordance program. By means of concordance analysis, learners can, for example, find out the various meanings of homonyms by comparing the different contexts in which they occur, or they can analyze the use of German adjectives with different suffixes and thus figure out the general meanings of the latter (for comparative review of freely available concordance programs and web tools, see Moran, 2006; Diniz, 2005).

A good example for an inquiry-based activity is WebQuest (cf. Godwin-Jones, 2004). In a WebQuest, some or all the information with which learners interact comes from resources on the Internet. Learners start a WebQuest by gathering information from a topic-oriented hotlist of Web sites. The task is to create a document that summarizes and synthesizes the information gathered.

This can be accomplished by filling out a questionnaire, writing a report, giving a presentation, or creating a web site. The task of a WebQuest should promote use of the target language and should require the use of authentic materials. In carrying out a WebQuest, learners can, among other things, acquire knowledge about the target culture and the target language by processing information with regard to a given task. Following March (2007), "the main critical attribute of a WebQuest is to facilitate […] transformation of information into a newly constructed, assimilated understanding."

6 Learning as social practice

Some of the constructivist activities discussed in the previous section tend to be collaborative or would, at least, result in shared learning experiences. WebQuests, for example, are usually group activities that "require meaningful communication for the production of the end product" (Godwin-Jones, 2004, p. 9). Group tasks require the learners not only to work up information in order to present a topic but also to develop an opinion on that topic. With regard to Kant, we can bring forward the argument that the aesthetic judgment basically aims at sociability (German: "Geselligkeit"; cf. Kant, 1790/2000, p. 103, pp. 176–178). That means, not only with our opinions, but also with our cognitions, we lay claim to approval. Learning, then, is not merely a cognitive process within an individual, but is rather merged with social practice.

Warschauer (2000) has pointed out that, with the emergence of Multimedia and Internet, a pedagogical change from communicative CALL (Computer Assistant Language Learning) to integrative CALL has taken place. While the former was in line with a cognitive view of language learning which states that through interaction learners can develop language as an internal mental system, the latter being based on a socio-cognitive view which rests on the assumption that language learning involves apprenticing with new discourse communities. Especially the Internet offers learners many opportunities to participate in authentic discourses. They can have conversations with native speakers in chat rooms, contribute to online journals by posting their opinions in a collaborative blog (Weblog), or, taking up our example from the previous section, create a website in a foreign language. According to Warschauer, the observation that learners can actively contribute to and participate in the social practice of expressing themselves on the Internet points to the central objective of integrative CALL: agency.

This is not the place to discuss the concept of agency in detail[12]. Rather I would like to concentrate on Warschauer's argument that the computer provides learners with "a powerful means to make their stamp on the world" (2000). Two aspects are of interest in the context of this article's concept of autonomy. First, the use of digital media provides learners with the power to construct a representation of reality and the power to impose reception of it by others (cf. Kramsch, A'Ness & Lam, 2000, p. 97). With the help of digital media it is relatively easy to speak one's mind and to express one's feelings, to discuss one's opinions and interpretations and thus construct one's identity in real-life discourses. Learners realize that their actions have meanings and interpretations and that they are able to affect others and influence their thinking (cf. Kramsch et al., 2000, p. 82).

Second, when the things learners do with digital media show tangible results, they experience a characteristic delight. As Murray puts it, "agency is the satisfying power to take meaningful action and see the results of our decisions and choices" (1997, p. 126). Of course, this is especially true for computer games and other electronic environments with a narrative structure, but even to create and to publish a Web page or to contribute to a blog can be delightful. Godwin-Jones points out that "blogs have created convergences between consumers and creators, between reading and writing, between public and private spaces" (2006, p. 8). Blogs not only invite the visitor to read, but also to write responses to items read. The interactive environments of digital media provide learners with countless opportunities to create and to contribute to products, and to participate in collaborative tasks while at the same time supplying them – sometimes immediately – with the outcome of these various activities. It is, in my opinion, this close connection between the phase of action and the phase of consummation that gives learners a sense of agency. Following Dewey's concept of aesthetic experience, we might say that "through [their] successive deeds there runs a

sense of growing meaning conserved and accumulating toward an end that is felt as accomplishment of a process" (Dewey, 1987, p. 45).

The brief discussion indicates that the Internet provides its users with a high degree of agency. Following Lantolf and Pavlenko, it is agency that links motivation, or investment, to action (cf. 2001, p. 146). The economic concept of investment makes clear that people are ready to engage in activities with the understanding that they will acquire symbolic and material resources (cf. Norton, 2000, p. 10). On the Internet, a person can invest in his online identity, in his participation in online communities, and he can construct his representation of reality (cf. also Warschauer, 1999, pp. 112–116). Meanwhile it is common to speak of one's second identity, if not of one's "second life." That points to the fact that the Internet is no longer simply a source of information or an instrument of communication, but rather a place of social practice. Is it surprising that learners are gladly prepared to participate in online activities?

Apparently, the Internet does not subjugate learners to mechanical chains of effect; rather it provides them with countless opportunities to participate in social practice. Picking up my argument from the previous section, it becomes evident that learners who participate in online-activities are not objects of predetermined learning processes but subjects of deliberate actions. In terms of Kant's concept of autonomy, we may say that these learners are persons who determine their own actions, i.e. they are persons who exist as ends in themselves.

7 Conclusion

In section 3, we discussed the demands moral philosophy places on autonomous learning. The primary conclusion of our discussion was that a person does not only have the capacity to determine his own actions by himself, but that he has to act accordingly. This implies that the subjugation of persons to mechanical chains of effect should not be allowed. In section 4, we looked at learning programs of the computer-as-tutor approach. We found, although these programs give a great deal of control over their various elements, they subjugate learners to mechanical chains of effect and, therefore, have only a limited capacity for autonomous learning.

In section 5, we extended our argument by examining learning as reconstruction. Following Kant, man is endowed with a particular faculty of mind (aesthetic judgment) which enables him to assimilate the world around him by constructing concepts and finding out regularities on his own. According to this, the use of tools or technologies, which support learners in their endeavors to assimilate the object of learning, is in line with autonomous learning. In section 6, we saw that the degree of learners' agency has great impact on autonomous learning. There is evidence that the Internet with its opportunities to participate in real social practice appreciably enhances the agency of individual learners. Because learners experience their participations as investments in their online identities and relationships, they are readily willing to engage in learning activities. Following Kant's concept of autonomy, we may say that these learners are persons who determine their own actions.

And Archimedes? What would he have done if the Internet had already been invented in his time? First, I think, he would have quickly made his way home after realizing that he was naked. A little later he certainly would have turned on his notebook to develop a Webpage with a nice Flash movie in which the buoyancy principle is illustrated (cf. http://www.anderegg-web.ch/phil/archimedes.htm#2). Finally, he possibly would have created a blog for discussing his discovery with people all around the world. Or, would he have preferred to put on his clothes, go out into the street and talk about his discovery with the citizens of Syracuse?

Notes

[1] Background information can be found in Bell (1986, pp. 28–29), Schneider (1979, pp. 87–90) and in Wikipedia (article "Archimedes").

[2] These expectations have been expressed in many so-called "self-learning centers", "self access centers" or "multimedia centers" in institutions of learning.
[3] Including his preparatory publication *Groundwork of the Metaphysics of Morals* (Kant, 1785/1996).
[4] German original: "Der Wille ist eine Art von Kausalität lebender Wesen, sofern sie vernünftig sind, und Freiheit würde diejenige Eigenschaft dieser Kausalität sein, da sie unabhängig von fremden sie bestimmenden Ursachen wirkend sein kann." (Kant, 1785/1991, p. 81).
[5] German original: "Was kann denn wohl die Freiheit des Willens sonst sein, als Autonomie, d. i. die Eigenschaft des Willens sich selbst ein Gesetz zu sein?" (Kant, 1785/1991, p. 81).
[6] German original: "Der Wille wird als ein Vermögen gedacht, der Vorstellung gewisser Gesetze gemäß sich selbst zum Handeln zu bestimmen." (Kant, 1785/1991, p. 59).
[7] Cf. Kant's original words: "*Die vernünftige Natur existiert als Zweck an sich selbst*." (Kant, 1785/1991, p. 61).
[8] German original: "*Handle so, daß du die Menschheit, sowohl in deiner Person, als in der Person eines jeden andern, jederzeit zugleich als Zweck, niemals bloß als Mittel brauchest*." (Kant, 1785/1991, p. 61).
[9] Baumgartner and Payr have developed a heuristic software typology in which concepts of learning theories and learning goals have been assigned to types of software. While drill and testing software are attributed to the behavioristic model of learning as well as imitation and application as learning goals, the learning presented here rather follows the cognitivistic model of learning and is, for this reason, directed toward selection and decision (see Baumgartner & Payr, 1999, pp. 137–161).
[10] Ohm (2004) analyses the teaching strategy of a grammar unit of the CD-ROM based learning software *Einblicke* on the basis of Salomon's supplantation model.
[11] See also approaches that attribute an aesthetic dimension to the scientific process of gaining knowledge (e.g. Ohm, 1998, p. 33–38; Rohr, 1993, esp. chap. V, 140–159).
[12] Agency has become a popular concept in the social sciences (cf. e.g. Emirbayer & Mische, 1998, Côté & Levine, 2002); in the field of second language research cf. especially Pavlenko & Lantolf, 2000, Lantolf & Pavlenko, 2001, and Lantolf & Thorne, 2006. Cf. also Warschauer's discussion of sociocultural perspectives on CALL (2005).

References

Baumgartner, P., & Payr, S. (1999). *Lernen mit Software* (2nd ed.). Innsbruck: Studien-Verlag.

Bell, E.T. (1986). *Men of mathematics*. New York: Touchstone.

Côté, J.E., & Levine, C.G. (2002). *Identity, formation, agency, and culture. A social psychological synthesis*. Mahwah: Lawrence Erlbaum.

Dewey, J. (1987). *Art as experience. The later works, Volume 10, 1934*. Carbondale and Edwardsville: Southern Illinois University Press.

Diniz, L. (2005). Comparative Review: TEXTSTAT 2.5, ANTCONC 3.0, and COMPLEAT LEXICAL TUTOR 4.0. *Language Learning & Technology, 9*(3), 22–37. Retrieved March 20, 2007, from http://llt.msu.edu/vol9num3/pdf/review2.pdf.

Emirbayer, M. & Mische, A. (1998). What is Agency? *American Journal of Sociology, 103*(4), 962–1023.

Godwin-Jones, R. (2004). Language in action: From Webquests to Virtual Realities. *Language Learning & Technology, 8*(3), 9–14. Retrieved March 20, 2007, from http://llt.msu.edu/vol8num3/pdf/emerging.pdf.

Godwin-Jones, R. (2006). Tag clouds in the blogoshere: Electronic literacy and social networking. *Language Learning & Technology, 10*(2), 8–15. Retrieved March 20, 2007, from http://llt.msu.edu/vol10num2/pdf/emerging.pdf.

Heipcke, K. (1983). *Die Wirklichkeit der Inhalte*. In K. Heipcke et. al. (Eds.), Studien zur Entstehung und Aneignung von Unterrichtsinhalten (pp. 9–70). Kassel: Gesamthochschule Kassel.

Holec, H. (1980). *Autonomy and foreign language learning*. Strasbourg: Council of Europe.

Kant, I. (1996). Groundwork of the metaphysics of morals. In I. Kant, *Practical philosophy* (M.J. Gregor, Ed. and Trans.) (pp. 37–108). Cambridge: Cambridge University Press (Original work published 1785)

Kant, I. (1991). *Grundlegung zur Metaphysik der Sitten. Werkausgabe. Band VII* (11th ed.). Frankfurt: Suhrkamp. (Original work published in 1785)

Kant, I. (2000). *Critique of the power of judgment* (P. Guyer & E. Matthews, Trans.). Cambridge: Cambridge University Press (Original work published 1790)

Kramsch, C., A'Ness, F., & Lam, W.S.E. (2000). Authenticity and authorship in the computer-mediated acquisition of L2 literacy. *Language Learning & Technology, 4*(2), 78–104. Retrieved March 20, 2007, from http://llt.msu.edu/vol4num2/kramsch/default.html

Lafford, B.A. (2004). Review of Tell Me More Spanish. *Language Learning & Technology, 8*(3), 21–34. Retrieved March 20, 2007, from http://llt.msu.edu/vol8num3/pdf/review1.pdf.

Lantolf, J.P., & Pavlenko, A. (2001). (S)econd (L)anguage (A)ctivity theory: understanding second language learners as people. In M. Breen (Ed.), *Learner Contributions to Language Learning* (pp. 141–158). Harlow: Longman.

Lantolf, J.P., & Thorne, S.L. (2006). *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press.

Leakey, J. (2006). Evaluation of a one-year trial of Auralog's TellMeMore education (Version 7) software package in a higher education context. *CALL-EJ Online*, 8(1). Retrieved March 20, 2007, from http://www.tell.is.ritsumei.ac.jp/callejonline/journal/8-1/leakey.html.

Little, D. (1999). Autonomy in second language learning: some theoretical perspectives and their practical implications. In C. Edelhoff & R. Weskamp (Eds.), *Autonomes Fremdsprachenlernen* (pp. 22–36). Ismaning: Hueber.

March, T. (2007). *What Webquests are (really)*. Retrieved March 20, 2007, from http://bestwebquests.com/what_webquests_are.asp.

Moran, K. (2006). Review: Freely available software for comprehensive corpus-based analysis. *CALL-EJ Online*, *7*(2). Retrieved March 20, 2007, from http://www.tell.is.ritsumei.ac.jp/callejonline/journal/7-2/Moran.html.

Murray, J.H. (1997). *Hamlet on the Holodeck. The future of narrative in cyberspace*. Cambridge, MA: The MIT Press.

Norton, B. (2000). *Identity and language learning: gender ethnicity and educational change*. London: Longman.

Ohm, U. (1998). *Die Bezeichnung 'experience' im Werk John Deweys. Eine Untersuchung zur historischen Semantik im sozialwissenschaftlichen Kontext*. Frankfurt am Main: P. Lang.

Ohm, U. (2004). Archimedes im Bade. Moraltheoretische und pädagogische Überlegungen zur Didaktik des Einsatzes digitaler Medien. In H. Barkowski & H. Funk (Eds.), *Lernerautonomie und Fremdsprachenunterrich*t (pp. 36–60). Berlin: Cornelsen,.

Papert, S. (1993). *Mindstorms. Children, computers, and powerful ideas* (2nd ed.). New York: Harvester & Wheatsheaf.

Papert, S. (1994). *The children's machine. Rethinking the school in the age of the computer*. New York: Harvester & Wheatsheaf.

Pavlenko, A., & Lantolf, J.P. (2000). Second language learning as participation and the (re)construction of selves. In: J.P. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 155–177). Oxford: Oxford University Press.

Röder, R. (1998). *Der Computer als didaktisches Medium. Über die Mythen des Mediums und das Lernen von Subjekten*. Bodenheim: Syndikat.

Rohr, S. (1993). *Über die Schönheit des Findens. Die Binnenstruktur menschlichen Verstehens nach Charles S. Peirce: Abduktionslogik und Kreativität*. Stuttgart: M & P.

Schneider, I. (1979). *Archimedes. Ingenieur, Naturwissenschaftler und Mathematiker*. Darmstadt: Wissenschaftliche Buchgesellschaft.

Warschauer, M. (1999). *Electronic literacies. Language, culture, and power in online education*. Mahwah, NJ: Lawrence Erlbaum.

Warschauer, M. (2000). The death of cyberspace and the rebirth of CALL. English Teachers' *Journal, 53*, 61–67. Retrieved March 20, 2007, from http://www.gse.uci.edu/faculty/markw/cyberspace.html.

Warschauer, M. (2005). Sociocultural perspectives on CALL. In J. Egbert & G.M. Petrie (Eds.), *CALL research perspectives* (pp. 41–51). Mahwah, NJ: Lawrence Earlbaum. Retrieved March 20, 2007, from http://www.gse.uci.edu/faculty/markw/spoc.pdf.