Article

Dimensions of distance: a comparison of classroom education and distance education

David M Kennedy

Distance is obviously a core issue in distance education. But distance is a factor in classroom-based education as well. Classroom-based teachers and distance educators have a common interest in the dynamics of distance.

The focus of much discussion in distance education is on geographical distance and how it may be bridged. However, this focus obscures the more fundamental issue of educational distance. Educational distance includes cognitive distance, role distance and access distance. This form of distance is as potent in the classroom environment as it is in a virtual learning environment.

The writer explores this theme by his analysis of the communication patterns between teacher and students in one module in a BSc Health Studies degree programme. The writer has taught this module in both distance education format and in traditional classroom-based format. His finding is that the communication time between the teacher and students in the distance education form of the module is 29% greater than the communication time in the classroom-based form. The most significant feature of the communication pattern is the greater quantity of individual communication between student and teacher in the distance education format.

Both the quantity and type of the communication in each of these modes suggest that the more communication-rich distance education format has greater potential for overcoming the problems of educational distance within this module. © 2002 Published by Elsevier Science Ltd

David M Kennedy
MA, RGN, RMN, RNT, Teaching Fellow, Faculty of Health and Social Sciences, University of Paisley, High Street, Paisley, PA1 2BE, UK
Tel.: 0141 848 3837;
Fax: 0141 848 3947

(Requests for offprints to DK)
Manuscript accepted:
4 January 2002

Introduction

It is stating the obvious to say that 'distance' is a core issue in distance education. But it is a statement of the obvious that may be worth making. As is so often the case, the 'obvious' can hide the important. A focus on distance as primarily the geographical separation of teacher and students serves to obscure the deeper issues of psychological and educational distance.

The relevance of this distinction in conceptions of 'distance' is twofold. One is that discussions on distance education may concentrate on the surface issue of physical separation as if that was the main distinguishing feature of this educational medium. The other is that educators may fail to see that the issues of 'distance' apply equally to the classroom-based delivery of education.

There are, then, shared concerns for both the classroom teacher and the distance-learning teacher in examining the 'distances' that affect student and teacher. This paper

explores these shared concerns. The author presents a quantitative analysis of the dimensions of distance experienced in his teaching of the same module in both conventional, classroom-based mode and in distance mode. The measure he uses for quantitative analysis is the number of hours that the teacher and student are in communication with each other. He then progresses to a conceptual analysis of dimensions of distance. The aim of this analysis is to inform teachers in both the conventional classroom and the virtual classroom of the dynamics of distance in educational practice.

Distance defined and explored

When we encounter the term 'distance education' we need to be alert to the different meanings and different emphases that authors have in mind.

Gottschalk (2000, online) describes distance education in the following terms: 'At its most basic level, distance education takes place when a teacher and student(s) are separated by physical distance, and technology (i.e. voice, video, data and print), often in concert with face-to-face communication, is used to bridge the instructional gap'. Four emphases in this definition are noteworthy: the primary concern with physical distance; the role ascribed to technology in bridging that physical distance; the judgement that technology is limited, so that it needs to be bolstered with human presence from time to time; and the equation of physical distance with the presence of an instructional gap. This last emphasis particularly has to be challenged.

Hedge (1996) characterizes the 'instructional gap' in another way. She calls it 'psychological distance'. By this she means the different way in which an educational provider may view students who are not the 'conventional' full-time, on-campus students. She cites the observations of Duke (1992, page 6) that part-time, distance learners 'are assumed to be ancillary; more marginal, of lower priority. They are not the essential business of the university'. This might be

better characterized as a 'social' or 'status' distance. It contains the disturbing implication that distance learners, being frequently part-time students, receive less wholehearted support from the educational provider than the full-time, on-campus student. It clearly has more serious implications for the student than geographical distance.

Other writers have a different perspective. For example, Nixon and Helms (1997) emphasize the connectedness of teacher and student. 'Distance learning, as it is most commonly defined', they write, 'uses the availability of telecommunications equipment to develop a "virtual" classroom, joining students or employees at two or more remote locations' (page 349). This is a refreshing view – that distance education 'joins' people. The emphasis here is on 'education' rather than on 'distance'. Such thinking also provides a template which can be applied to conventional education. We may see conventional education as the use of transport and specially equipped buildings to bring together students and teachers from separate locations for the purposes of learning. In both conventional and distance education, distance is an element. One response to distance is to require the student to travel to the educational institution. An alternative is to enable the course to travel to the student.

Broadly speaking, then, it is possible to distinguish two interpretations of the word 'distance' in these concepts of distance. One relates to physical distance, the other to educational distance. One is a matter of geography, the other a matter of pedagogy.

The educational implications of this distinction are significant. When distance educators focus on geographical distance, they tend to concentrate on physical strategies to bridge that distance. Their pre-occupation is with mass production of materials and efficient mechanisms to deliver course materials to students. When they focus on educational distance, they ensure that their delivery and support mechanisms enable students to engage with and understand the materials, communicate with teachers and fellow-students and experience

both a personalized and a collaborative approach to learning. Garrison (1997) characterizes these two approaches respectively as the industrial and the post-industrial models of distance education.

Focus

The discussion presented in this paper compares the delivery of one module in a Bachelor of Science Health Studies course by conventional means (classroom education) with the delivery of that same module by online, supported distance education. The elements of distance alluded to in the foregoing discussion will be analysed in the context of these two modes of delivery of the one module. The purpose of this comparison is to quantify to some extent the dimensions of distance that affect both the distance-learning student and the conventional on-campus student.

The context of this study is the University of Paisley in central Scotland. The students involved are health professionals – principally Registered Nurses – who are undertaking the BSc Health Studies degree programme. This programme is taught on campus as a part-time evening course. It is also taught by distance learning. The modules offered in the distance-learning programme are exactly the same in content as those taught on campus. Both forms of the module require 150 hours of notional student effort.

Method

This study focuses initially on the communication time between the teacher and the students in each of these forms of the module. The writer has computed in hours the amount of course time which has involved communication between the teacher and the students in both modes of delivery. He presents this as a quantitative measure of the 'connectedness' (to use Nixon and Helms' terminology) of teacher and students.

The writer segments communication into two broad areas – communication between the teacher and the class as a group; and communication between the teacher and individual students. Communication time between the teacher and the whole class is represented, in the classroom environment, by (1) lectures and (2) group tutorials. In the distance-learning environment it is represented by (1) e-mails addressed to the whole student group, (2) forum discussions ('asynchronous', or non-simultaneous, messages to the shared bulletin board); and (3) teleconferences (synchronous online keyboard-mediated conversations). Note that the writer has calculated the time in which the teacher is in communication with students by electronic means as the time taken to compose messages, not the time taken to transmit a composed message.

Communication time between the teacher and individual students is represented in the campus environment by the time in which individual meetings between the student and the teacher took place. In the distance-learning environment it is represented by the time during which the teacher was composing e-mails to individual students.

This approach has its limitations and its difficulties. A limitation is that it focuses only on the measurable time in which teacher-generated communication has occurred. It does not represent a full record of the communication within the groups. A difficulty lies in treating as equivalent the mass communication of a lecture with the mass communication of e-mail correspondence. However, the function of both of these modes of communication is the transmission of information to a group of students and it is in this sense that the comparison is made.

This approach also makes no assumptions about the quality of the communication that is being analysed, although comment about the quality of written communication is made later.

The figures in Tables 1 and 2, then, represent not the full picture of communication within the modes of delivery of the module but the quantifiable, outward communication of the teacher with the students. The purpose of these figures is limited. It is to provide a comparison of the forms and quantity of teacher-generated communication that occurs within the classroom and the distance-learning

environments. From that broad information we can make some assertions about which dimensions of 'distance' are significant and progress to a further analysis of what 'distance' in the educational environment means.

The two programmes

The on-campus programme of study

The on-campus students attend 13 two-hour lectures in the 15 week module. This lecture series is supplemented with two group tutorials. Each tutorial lasts for two hours. Students also have personal access to their tutor. In the module under examination here, the teacher conducted eight hours of individual tutorial work with students. Most of these eight hours were concerned with discussing the students' preparation for assignments. A smaller proportion was concerned with broader academic guidance, for example balancing work and family life and study.

The pattern of educational contact between teacher and students, in quantitative terms, is summarized in Table 1.

The distance-learning programme of study

The distance education programme utilizes communication channels – both electronic and postal – to deliver the course. Instructional material is posted to students in the form of printed booklets, containing expository text, exercises, self-assessment questions and references to further reading. The students are invited to participate in weekly forum discussions and teleconferences. In addition, each student is given academic support by his or her teacher by e-mail and by other means of communication as appropriate, for example, by letter, telephone or fax.

During this module the teacher spent 34 hours composing and sending e-mail messages to students. Eight of these hours consisted of messages directed to the whole group. For example, at the beginning of the module, the teacher sent welcome messages and guidance on how to participate. Twenty-six hours consisted of messages directed to individual students. These messages ranged from specific guidance on how to approach an assignment to requests for general information about other modules or degree courses. This immediately indicates one major difference between classroom-based education and distance education. In classroom-based education, the interaction between teacher and students is used to convey educational content. In distance education it is used to give educational support.

The pattern of support for the distance-learning students, then, is as shown in Table 2.

These figures indicate that the distance education programme of delivery is more communication-intensive than the classroom-based programme. In the period of the module, the teacher has been involved in 49 hours of communication with students compared to 38 hours in the classroom-based programme. This is a 29% increase in communication time.

Table 1 Communication time between teacher and students in the on-campus course, expressed in hours

Nature of communication	Number of hours
Communication between the teacher and the whole student group	
Lecture	26 hours
Group Tutorials	4 hours
Communication between the teacher and individual students	
Individual tutorials	8 hours
Total	38 hours

Table 2 Communication time between teacher and students in the distance learning course, expressed in hours

Nature of communication	Number of hours
Communication between the teacher and the whole student group	
E-mail correspondence	10 hours
Forums	5 hours
Teleconferences	8 hours
Communication between the teacher and individual students	
E-mail correspondence	26 hours
Total	49 hours

These figures point up another significant difference between the classroom-based and the distance-education formats of this degree programme. In the classroom-delivered format, the students are mostly involved in group communication with the teacher (30 hours in total), more rarely in personal interaction with the teacher (eight hours). The group communication is predominantly passive – listening to the lecturer. In the distance-education format, a different picture emerges. The students are mostly involved in personal communication with the teacher (26 hours) and also significantly in group interaction (23 hours). The distance-education format seems to have two advantages over the classroom-based format – responsiveness to the concerns of individual students and involvement of the students in dialogue.

An important difference, of course, is that the mode of communication in each of these modes of delivery is different. In the classroom, the mode is oral communication; in the distance education programme, the mode is writing. Basically it is the difference between conversation and correspondence.

That in itself sheds some light on the differing amounts of time the two programmes demand. Our rate of speaking is much quicker than our rate of writing. The normal speech rate varies from 125 to 175 words per minute, with an average of 150 words per minute (Hargie et al. 1994, p 205). A competent rate of keyboarding is 30 words per minute. Consequently the communication pattern in the classroom is much faster than the pattern of communication between the participants in the distance education course. The communication within the classroom also has the added richness of the non-verbal elements of communication. On the other hand, written communication, with its processes of self-editing before, during and after composition, supports a more thoughtful dialogue. As Lavelle and Zuercher (2001, p 273) put it, 'Writing is the externalization and remaking of thinking...composition [is] a reflective tool for making meaning'.

Dimensions of distance

Geographical distance

The analysis of the figures presented above begins to put the concept of 'distance' in perspective. Geographical distance is not an educational barrier for the distance-learning students. The support they receive is closer than the support that the classroom-based students receive. In fact the personal nature of the support they receive makes one ponder if it is the classroom-based students who are disadvantaged by distance. They have travel to the institution to contend with and the average travelling distance for the group in question is 14 miles, with a range of 1–40 miles.

Educational distance

Our concern about distance, then, has to move from the geographical to the educational dimension. Some key forms of educational distance have already been alluded to. They are amplified here.

Cognitive distance

'Cognitive distance' refers to that gap between the understanding one person has concerning a topic and the understanding that another person has. In the educational context, this form of distance is most frequently seen between teacher and student. But clearly it exists between student and student as well.

More technically, cognitive distance is the difference between the cognitive structures that one person possesses – and which enable him or her to engage with a topic – and the cognitive structures that another person possesses in relation to that topic. Ausubel et al. (1978) point out that for effective learning, the student requires to possess cognitive structures that enable him or her to relate new material to his or her own cognitive structures. Bridging the 'cognitive distance' is a matter of incremental movement by the student from his or her current understanding to a more advanced understanding.

In the classroom context, that movement is facilitated by the teacher lecturing and conducting tutorials, and by the students participating in seminars and collaborative

exercises. But the evidence of the time spent on the various activities of the module under scrutiny here indicates that the distance-learning student has more opportunity to bridge cognitive distance in a personal and collaborative manner than the classroom-based student.

Role distance

The concept of 'role distance' refers to the gap in status that can exist between the student and the teacher within the social structure of an institution. In the terminology of organizational analysis it is 'power distance' (Sutherland & Canwell 1997). Any institution attributes status to its members in terms of the power and influence that these members exercise. For example, the teacher is cast in the role of expert, the student in the role of beginner; the teacher in the role of provider of education, the student in the role of consumer. Most powerfully of all, the teacher makes definitive judgements on the quality of the student's work.

The teacher, moreover, is associated with the organizational structures which exert daily influence over the students: for example, the teacher records the presence of the student in the class, directs the timetable of instruction and arranges the configuration of the learning space.

Many of these features of role distance are evident in both classroom education and in distance education. But there are significant differences. In the distributed learning environment that is typical of distance education, the 'expertise' of the teacher is less apparent. The true expertise of the teacher becomes that of guide to learning resources and the effective use of them.

Moreover, the role of the teacher in a distance education environment is less obviously associated with the administrative levers of power. For instance, the teacher does not monitor attendance (but does monitor participation). The place of instruction is no longer the instructor's: instruction is equally taking place in the personal space of the student and the teacher. The pace of learning is more under the control of the student than the teacher. There is clearly still a power differential between the student and the teacher in distance education, but the physical trappings of that power differential are removed by distance.

Access distance

Access distance is a form of geographical distance, but its implications belong to the discipline of social geography rather than physical geography.

The obvious implication of access distance is that classroom-based students have to overcome distance so that they can attend the educational institution which provides the course.

Access to the institution, of course, is not the only access issue. Two other important access concerns are access to the library and access to tutors. The library is not always open during the hours that suit part-time students in employment. Teachers are not always physically present in the institution when the students need to see them.

These factors are eliminated in the distance education programme. Material for study is sent to the student's home address. Students access the library journals by electronic means. They access their tutors by e-mail correspondence. They receive a response within 24-hours. Electronic access is not exclusive to distance-learning students, of course, but is increasingly used by the classroom-based students as well.

But the wider dimension of access distance, of course, is access to education, rather than access to one particular educational institution. Distance education often claims that it widens access to education (Sherwood et al. 1994). In the case of the course under consideration here, that wider access is enhanced in some respects but constrained in others. It is enhanced in the sense that geographical and time issues are no barrier to participating in the course. It is constrained in the sense that potential students must own a personal computer and printer and have a connection to the internet.

Conclusion

There are two interpretations of 'distance education' discernible. One emphasizes the geographical divide between teacher and learner and learner and learner. The other emphasizes the instructional potential within the methods used to bring distance-learning participants together.

Geographical distance is a factor in all education, whether it is called 'classroom education' or 'distance education'. But the presence of a geographical gap does not equate with an instructional gap. An instructional gap is equally well a possibility in distance education and classroom-based education. Of the two forms of instruction that we have considered here, the more communication-rich form is the distance education form. That enhanced communication is one way in which an instructional gap has the potential for being overcome. The collaborative, personal and supportive character of online distance education – on the evidence of this study – has greater potential for overcoming educational distance than has the classroom.

Effective distance education is student-centred. Its strength is that it combines both the resources of distributed learning and the support of a personal tutor. This is resource-intensive work. It involves the distance education teacher in a more personal consultative and tutorial role with students. The conclusion of this author and others (for example, Harasim et al. 1995, Herberger et al. 1998, Cravener 1999) is that it is both communication-rich and time-demanding. Teachers and educational managers need to be aware of this and its implications for time and staffing.

The comparison of distance education and classroom-based education in one course in the University of Paisley indicates that the 'distance' student has quicker and closer access to the educational materials and resources and academic support than the 'conventional' student. Geographical distance is not the issue: educational distance is, for both the classroom teacher and the distance educator.

The limitations of this study

This study focuses on one module in one programme of learning. It reflects the experience of one teacher. The focus now needs to widen to other teachers working in other modules. But the purpose of the study has been to compare qualitative and quantitative aspects of teaching by conventional means and by distance learning. The findings the author presents align with the findings of other authors who have looked at the demands that distance education makes on both teacher and students alike.

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