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Computer-Mediated Communication (CMC) and Disability Support: Addressing Barriers to Study

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Introduction

The case study reported here formed part of a linear series of studies undertaken as doctoral research at the Institute of Educational Technology of the Open University between 1994 and 1999. It explored ways in which computer-mediated conferencing (one type of computer-mediated communication [CMC]), could address barriers to study encountered by undergraduate distance learners with long-term health problems, identified by a large scale postal survey of volunteers. These problem areas include: difficulty with handwriting, academic and social isolation and fatigue, together with a need for better interactive communication with support agencies. The approach taken was designed to maximise student autonomy in relation to their studies. Thirteen participants were provided with access to the services of an on-line educational counsellor, both by e-mail and in a confidential peer group conference in the environment of a 'Virtual Campus'. The findings suggest that informal contact with the counsellor in the group environment helped to build rapport and develop confidence for these students to approach her by e-mail when more private advice or help was needed.

Background

Rapid developments in data-communication technology in recent years have opened up hitherto undreamed-of opportunities for communicating at a distance. The growth of the Internet now enables an individual user to access a wealth of information from his/her personal computer (PC) that would have been inconceivable a decade ago. At the same time, a perhaps less generally known revolution has been taking place in the associated field of computer-mediated conferencing to support distance education and training.

It is now possible for students to log onto a 'Virtual Campus' at their educational institution from their own PCs, either via the Internet or through a direct dialup connection to the institution's internal data network. One example of such a 'Virtual Campus' is that of the Open University UK, which has developed from small beginnings in the 1980s to the sophisticated system that exists today, supporting a large number of students studying a wide variety of courses. In 2002 there are more than 150,000 Open University students with on-line access (Open University, 2002a). They can use their connection to the 'Virtual Campus' to communicate with staff and each other in a number of different ways. These include:

- one to one (by e-mail)
- one to many (for example, for the dissemination of information by a tutor to a group of students on a course)

- many to many (by interactive discussion between participants in a group conference area).

At the time when the studies reported here were undertaken, the most commonly used educational application of computer conferencing was tutor-led course conferencing to enable collaborative learning (Mason 1995). In this case the conference area is designed to support students taking one particular course, putting them in contact with both course tutors and fellow students. A number of researchers have identified the role of a conference moderator as a key factor for successful implementation in this kind of formal environment (Feenberg, 1989; Wilson and Whitelock, 1998; Salmon, 2000). The appropriate leadership role of this person may be variously chair, host, teacher or facilitator. At the start of the 21st century, a very recent development of this type of environment is the introduction of a distance education course where interactive group work on-line is integral to student studies and forms a part of assessed work (Open University, 2002b).

Computer conferencing can help to support students' education in less formal ways as well. One potential problem for distance learners is that of isolation, either because users are working/studying from a remote location or because they are housebound for some reason, including disability. Informal social communication via Self Help Groups (SHGs) in a 'Virtual Campus' environment can create a sense of belonging to a corporate body, akin to the experience of students on a traditional campus (Jennison 1997). In the wider world of cyberspace, Rheingold (1993) describes the advantages he experienced as a participant on one of the earliest 'Virtual Communities', the WELL. He provides examples that illuminate the value of so-called 'empathic on-line communities', particularly at times of personal difficulty. He suggests that for disabled people this type of communication can:

- remove the initial challenge of having to explain a handicap to able bodied people, thus enabling disabled people to be treated as thinkers and sharers of feeling in the same way as able-bodied people are
- enable those with disabilities to join in a conversation with no greater delay in communication than other computer users.

Others have identified potential advantages of text-based CMC for those with disabilities (Coombs, 1989, 1993; Bowers 1996; Burgstahler, 1997). For example, Coombs (1993) observes that computer-mediated conferencing permits a high degree of peer sharing and teaching. He also suggests that participants may share personal information more freely than if they were meeting face to face.

Both formal and informal aspects of on-line communication influenced the design of the study described here.

Rationale and design of the study

The study explored ways in which computer-mediated conferencing might address four common barriers to study experienced by undergraduate distance learners with long-term health problems, such as multiple sclerosis (MS), myalgic

encephalomyelitis/post-viral syndrome (ME) diabetes, arthritis, epilepsy, spinal problems and other less commonly occurring conditions. These barriers were identified by a large-scale postal survey of Open University student volunteers (Debenham, 1996a). They include:

- difficulties with handwriting
- academic and social isolation
- a need for better interactive communication with support agencies
- severe fatigue (affecting all aspects of the study process).

Computer conferencing might be expected to provide a way to address all of these difficulties. In addition, it might provide a suitable route for access to the services of an educational counsellor (advisor) briefed in special needs.

A feasibility study was designed and undertaken in 1996 to explore the effects of access to an on-line educational counsellor in the environment of a 'Virtual Campus' (that of the Open University) over the period of an academic year. Special provision included access to:

- the services of an educational counsellor via e-mail
- a peer group conferencing area, DOORway (Disabilities, Opportunities and OutReach [Debenham 1996b]), accessible only by named participants.

The aim was to provide an environment that would maximise autonomy for the student, taking into account both the set of common barriers to study described above and the need for a convenient route for individuals to make arrangements for personal accommodations for their special needs. This approach was termed the *Autonomy* approach (Debenham, 2001).

It should be explained here that educational counselling/advising in the Open University is based on a person-centred approach, designed to encourage the development of the whole person (Bailey, Brown and Kelly, 1996). However, it does not include an overtly therapeutic element. Advisors work primarily within the framework of study and will refer students to specialist agencies in the event of personal problems arising that fall outside this area (Tait, 1998). Within these guidelines there are nevertheless different possible interpretations of the role. The approach advocated by Woolfe, Murgatroyd and Rhys (1987) and those of Frost (1991) and Newell and Walker (1991) in conventional university environments (using traditional means of communication - face-to-face or telephone) influenced that taken in this CMC study. The two latter have particular relevance to the support of disabled students. A key factor in the advisor-student relationship is to maximise a student's involvement and control in decision-making on matters relating to their studies – in Frost's words, 'a system of shared responsibility'.

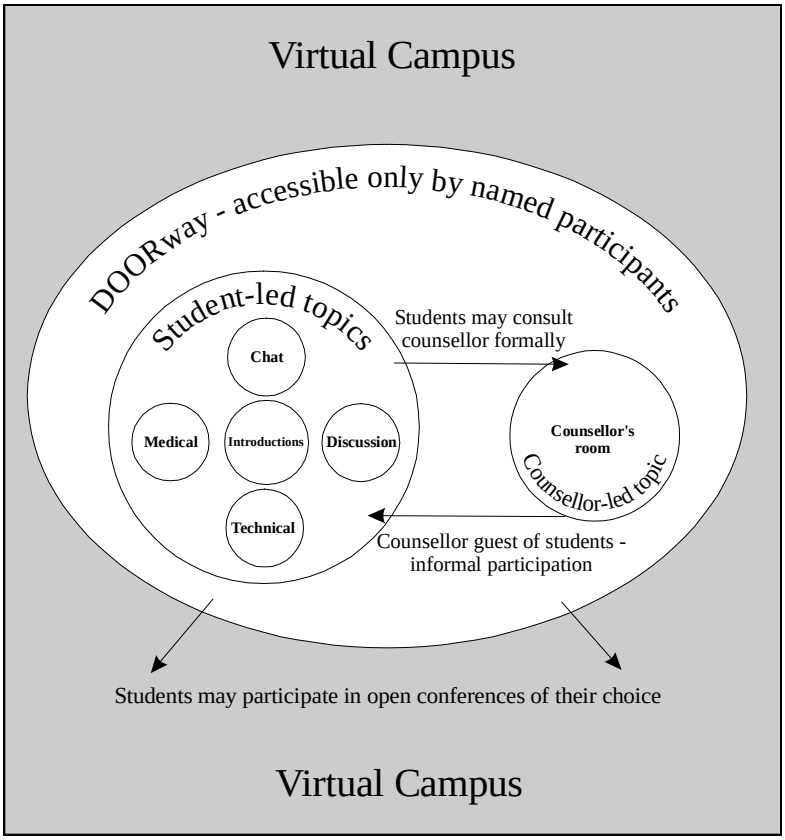
The results of the feasibility study suggested that computer-mediated conferencing was a potentially useful medium for providing support services, but that in order to succeed there was a need for rapport to be established between educational counsellor and student. It was therefore necessary to consider how this might be achieved on-line, without the face-to-face contact that normally underpins rapport between human beings.

To address this issue, the main study (in the following academic year) introduced a group dimension into the process. In addition to one-to-one e-mail, participants could now consult the advisor in a counselling topic within the peer group environment, DOORway. The intention was to construct an environment that would:

- maximise autonomy for the student in deciding when to ask for help
- promote rapport between the educational counsellor and students.

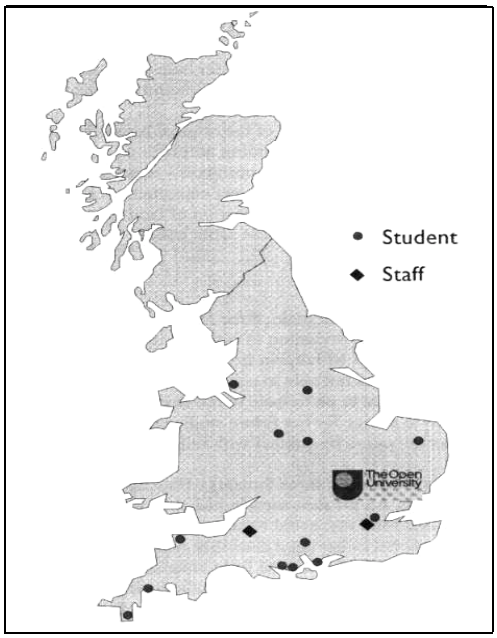
This called for a delicate balance of control to be established between students and advisor. The environment was structured in such a way that the professional status of the educational counsellor was distinctly maintained whilst also providing opportunities for informal contact with the students. The student-led area consisted of a set of topics moderated by a student moderator, drawn from the research participants. Here the counsellor was encouraged to take part informally as a guest of the students. In addition, the counselling topic (controlled by the educational counsellor) provided a 'virtual room' where she was available for consultation and interactive discussion with the student participants in a group environment. The researcher maintained a low-key presence in the conference area, acting in the role of facilitator and available to participants for consultation in case of need. Figure 1 below illustrates the dynamics of the structure.

Figure 1
Introducing an interactive group dimension to personal educational counselling on-line: the dynamics of the structure



Thirteen students (7 male, 6 female, including the 6 students from the feasibility study) participated in this main study together with an educational counsellor/advisor (based in London) and the researcher (based in Somerset). Using computer conferencing as the mode of communication has the advantage that staff members need not be based at the same physical location. The on-line counsellor was a staff member of the Open University with considerable experience of special needs advising who had previously used e-mail for communication with colleagues. However, she came to the project as a complete novice in the use of computer conferencing. Figure 2 illustrates the widespread geographic distribution of participants.

Figure 2
Geographical distribution of sample in the UK



Methods

Those who advocate taking an emancipatory approach to research in the field of disability studies emphasise the importance of a researcher coming from a similar background to the researched group (for example, see Oliver, 1992). This is consistent with accepted practice in other fields (Wilson, 1993). Participants in this study were told that the researcher herself has long-term health problems. They were informed in advance about ways in which they would be asked to provide information and their prior agreement was obtained before proceeding. The intention was to build up a picture of their experience of using computer-mediated conferencing to support their studies over the experimental period. A variety of methods of data collection were used for this purpose. These included:

- prior and post-participation statements of expectations and how these were fulfilled (obtained from both students and counsellor)
- student questionnaires, issued at intervals during the experimental period (electronically where possible)

- electronically held counsellor record sheets summarising contacts with each student. To preserve confidentiality between counsellor and client these gave only outline information of the dates and nature of the types of enquiry received and actions taken
- personal interviews with a sample of students to follow up interesting inferences from the main study
- the researcher's low-key presence in the peer group conference area.

Outcomes

The findings from the main study are encouraging. At the end of the experimental period ten of the thirteen participants reported an increase in their level of motivation to study, seven reported an increase in autonomy relating to their studies and ten in enjoyment of the study process. None reported a decrease in any of these factors. One student dropped out with great reluctance early in the second study because her health had deteriorated to the point that she was unable to continue. The results are considered below in relation to each of the four barriers identified by the postal survey. Pseudonyms have been used to protect the anonymity of participants.

Handwriting difficulties and solutions

Joanna 'I try to make best use of computer equipment to do most of my work, (writing with a pen can be a painful chore although a fountain pen helps less pressure on the wrist so I tend to type most things). Even when my wrists are swollen/painful I can still make use of a keyboard by using two rubber-ended pencils to press keys, luckily this isn't too often.'

Jennifer 'Computer - I type slowly, use spell-check and scanner. I take exams at home using the computer. I also use my computer for taking part in self-help groups in FirstClass. …[ ] …FC *(FirstClass*) allows me send my question to one person or a group. It allows me to communicate even when my face is very painful. I can type at the speed that is most comfortable with as much rest as I need. Voice input is also available though the programme I have is not the best on the market.'

These comments from students show how helpful computers can be for people with handwriting difficulties. However, for students in this situation, preparing an e-mail message can still be a much slower process than would be the case for those whose dexterity is not impaired, even when using keyboard or voice-recognition software. It may include taking rests in mid-message preparation. Working on-line can therefore become expensive – an important consideration for those on a low income. Nine of the twelve students still actively taking part at the end of the experimental period of the main study said that use of an off-line reader had been important to them. Comments drawn from the student questionnaires illustrate participants' concerns.

Sarah 'It is extremely expensive and time consuming to work on-line, even a local call number rings up big bills! An off-line reader is essential – it allows for slow reading, writing and replying to messages.'

Joe 'Gives time to compose letters.'

Arthur 'By using the off-line reader it enables me to work at a pace which suits me and at the same time not keeping telephone in use.'

In summary:

- Text preparation (word processing) using a computer can be beneficial for those who have problems with manual dexterity for a variety of reasons.
- When using CMC, the availability of an off-line reader enables text to be pre-prepared at the user's own pace and posted as a coherent whole.

Relief of isolation

Nine of the twelve remaining participants at the end of the year rated access to the confidential peer-group conference as extremely useful. Eight ranked this facility as their most important reason for logging on to the 'Virtual Campus'. It had provided a private forum for students to share information on ways they had found to tackle barriers encountered related to their studies, and also a space in which to socialise. Comments drawn from student questionnaires and personal interviews add insight into these findings.

Gareth 'With my health problems, I would never have branched out into course and other conferences as I have done, were it not for DOORway. …[ ] …

DOORway is a very reassuring presence. It is a home from which to go off exploring. …[ ] …The benefit of being able to contact such empathetic fellow-students by CMC is inestimable: it is possible to say things over this medium which would seem too trivial for either a telephone call or a letter, but I certainly feel better for saying them.

DOORway is a place where people understand what it's like to feel rotten, and where we can talk about our particular personal problems in a way which we might not want to or which might be misunderstood in the wide open spaces of the virtual campus. It is a place where humanity shines through the technology. […] The help I have received in DOORway, as a beginner in CMC, has inspired me to try to help others in my exploration of the virtual campus.'

Maureen 'I feel part of a group of people, recognising names and situations. I often get helpful information from messages and see that others are in a similar situation. There is a strong feeling of 'sympathy' for others.'

Pamela 'Without CMC I would have given up my studies. Reading about others experiences is encouraging and the friendly chat in DOORway is far better than any encountered at tutorials I managed to attend in my first year and the attendance rate is higher.'

Of those who did not contribute actively, one student commented that he had gained from reading other people's messages, but had not felt the need to take an active role. Two students had used the area infrequently. Both commented that they had felt too unwell to participate for the greater part of the academic year.

The on-line educational counsellor's comments in her post-participation statement provide a further perspective of student interaction in the peer group conference.

… 'The main change, for me, has been in the appreciation of the tremendous support the students are able to give each other through their own closed conferences. I was astonished at the way the conferences *(topics)* functioned and felt privileged to be able to observe the levels of warmth, joy and care, as well as the difficulties, upsets and struggles displayed by the students in their interactions with each other'...

(On-line educational counsellor, main study)

Seven of the twelve participants also rated access to openly available course-based Self Help Group conferences on the 'Virtual Campus' highly. Here they could engage in interactive discussion with other students taking the same course. A smaller number had found Special Interest Groups (e.g. a literature conference) to be of interest. Overall, the findings suggest that computer conferencing was beneficial in reducing isolation for this group of participants.

Improved communication with support services

The educational counsellor's informal participation in the student-led topics of the DOORway conference was successful in building rapport between professional and students. This gave individual students the confidence to approach her by e-mail when more private discussion was needed. Eleven of the thirteen participants in the main study said that they had found it helpful for the counsellor to participate informally in the student-led area.

Eight of the participants said that they had chosen to raise issues with the counsellor that were of possible interest to others in the group in the counselling topic and three that they had asked questions there in relation to problems they wished to share with their peers. Specific points of value raised by individual students included the following:

- it was easier to approach her having 'got to know her' through the conference
- her participation in the conference meant that she was aware of the types of problems faced
- using the counselling topic meant that other conference members could join in and contribute comments.

The counselling topic had also provided a secure environment in which sensitive questions relevant to the group could be raised. The advisor's post-participation comments acknowledged her growing appreciation of the value of this dimension as a tool in her on-line practice. The fact that she had changed her opinion during the course of the experimental period shows that she had found it possible to adapt her skills from face-to face communication to interactive text based contact via CMC, both one-to-one and in a group environment.

> …'I thought initially that the counsellor-client relationship would be best developed one to one. I can now see that there is another dimension to this development, the group dimension, which can complement and contribute to the individual counsellor-client relationship …
>
> … But, besides peer-support, there is definitely also a place for more formal educational counselling via CMC. If it is possible to cast aside pre-conceptions about the importance of visual and oral cues, then it is undoubtedly possible to develop effective counselling relationships via this medium. My initial cynicism was certainly allayed over the course of the year as the power of the medium became apparent' ...
>
> (On-line educational counsellor; end of year questionnaire)

Student comments at the end of the experimental period provide insights into their experience of access to the services of a personally allocated educational counsellor on-line.

Examples of positive experiences

Anna 'When I first became involved with this project I was anxious not to lose my Tutor Counsellor – I was nervous about changing over to someone I had never met, but now that I have become confident with the new ways, I feel easier with the on-line counselling than I ever did with the previous arrangements. I do not feel anxious about contacting my on-line counsellor, I just post the message and know she will get back soonest.

The on-line Counselling service has certainly been of benefit to my studies. When I had a disastrous experience at Summer School and had to return home before I completed the week, my on-line Counsellor helped me regain my confidence and encouraged me back to my studies at a time when all I wanted to do was give up my OU studies altogether. Without my on-line Counsellor I would certainly have given up.

My experiences have been very different from what I expected at the outset. I did not initially believe that having an on-line counsellor could be an improvement on the Tutor Counsellor system – I am now convinced that it has been a change for the better. It's much easier to be able to send a message when one is fit and well enough to send it, rather than trying to put over maybe a serious problem at a time that suits the Tutor Counsellor say between 5pm and 6pm on Sunday evenings. The previous system was very limiting and did not leave room for dealing with emergencies; this is particularly important to someone who cannot predict how they are going to feel on an hourly, let alone a daily basis.'

Maureen 'My expectations were high, and were met in terms of counselling and support. I was helped not only with this year's course, but also in making arrangements for future courses. I also received information, advice and support for issues and problems not directly related to studying, although they do have an effect on my ability to continue studying, eg benefit issues and practical problems. This support would not have been available anywhere else than in DOORway.'

Penny 'Previously no contact with counsellor and didn't expect to change, but having her around in DOORway made her appear more friendly and approachable even with things I would have thought too trivial to ring a counsellor about. Plenty of encouragement when anyone felt low about their abilities.'

Jeremy 'I feel that the availability of an online counsellor and discussion group is invaluable to disabled people. It gives a sense of security and a feeling of 'one-to-one' support which 'phoning a regional office for advice does not offer.'

Examples of less positive experiences

Eric 'Despite the disappointing nature of the experiment of online counselling, I believe a full time online counsellor would be a boon for all students not just disabled ones. A properly set up counselling CMC conference could save both the OU and students a lot of time and effort. It could be incorporated into the ACS help documents online already. An FAQ read only conference would be a help.' [Researchers explanatory note: ACS stands for Academic Computing Service, the name of computing administration department of the Open University at that time].

Peter 'Overall disappointing …[ ] … Too difficult to keep up with messages when accessing weekly at weekends. Just don't know who I'm sending messages to. Better face-to face.'

For the majority of participants the experience was a positive one. Of the two who expressed reservations, Eric had needed to contact the counsellor when she was away and therefore did not receive as swift a response as he wished. In this case, the researcher (acting in the role of facilitator) addressed his problem at the time when it arose. The counsellor was subsequently asked if she would be prepared to post a message in the counselling topic of DOORway to give advance notice should she expect to be absent for more than a few days. This allowed students to choose between the options of waiting for a reply until her return or telephoning their Regional Centre of the university for assistance.

Peter was not comfortable with using the medium for contact, preferring face-to-face discussion. However, at the end of the study he raised the possibility of video conferencing for this purpose. This shows that he had not ruled out use of electronic media per se.

Two surprising findings emerged relating to one-to-one communication between individual students and an on-line educational counsellor.

- Use of e-mail could help to remove the barrier of fear of being a nuisance when using the telephone to contact staff. This relates in particular to contact with part-time staff working from home. Of eleven students interviewed personally (six from the main study and five from a new sample), five made comments that suggested at a time of need they had sometimes hesitated to contact a Tutor-Counsellor by telephone in case they were calling at an inconvenient moment. Three of the four interviewees from the main study mentioned the advantage of e-mail to overcome the problem. The reason given for this was that messages could be sent and received at times convenient to both sender and recipient.

- The use of e-mail had provided a useful environment for intimate discussion in a distressing situation. Three participants made comments to suggest that discussion via this route had removed a barrier of embarrassment perceived to be present in face-to-face encounters when discussing sensitive issues relating to their studies. It had facilitated a feeling of greater control over the transaction for the student. One student specifically commented on this in the main study, as did three others in the later personal interviews. A contributory factor was that informal contact with the educational counsellor in the peer-group conference had helped to build rapport and develop confidence for these students to approach her by e-mail when more private advice or help was needed.

In summary, computer-mediated conferencing made it possible for an educational counsellor briefed in special needs to conveniently provide support for a group of students who were widely distributed geographically, thus making effective use of a scarce resource.

Fatigue

Severe incapacitating fatigue was a major area of difficulty identified by the earlier postal survey of volunteers. It affected all aspects of the Open University study process, including home study components, attendance at face-to-face tutorials, attendance at weeklong residential schools and the taking of examinations (Debenham, 1996a).

Computer-mediated conferencing was able to address several fatigue-related issues.

- Fatigue is linked with isolation. For students with long-term health problems, incapacitating fatigue is a major reason for inability to attend face–to-face meetings (or to attend only infrequently and with difficulty). Use of computer-mediated conferencing addressed this by permitting interactive communication with other students and staff in a variety of ways. Student comments illustrate that it had promoted a sense of belonging to a community – helping to remedy a sense of deprivation for people who may be housebound to a large extent.

- Communication could be undertaken whenever the student was feeling freshest. In the case of educational counselling support, three participants commented they had found it useful that CMC permitted messages to be both uploaded and downloaded when convenient to both student and advisor. They could then be read at leisure using an off-line reader facility. This had the added advantage that a written record of the 'conversation' existed for future reference.

- In relation to difficulties with handwriting, rest periods could be taken during message preparation if the student became fatigued. An off-line reader facility had provided a way to prepare messages over time. Only one of the twelve participants remaining at the end of the study would have been happy to work on-line.

Summary

Increased levels of motivation, enjoyment and autonomy were reported by a majority of this group of undergraduate distance learners with long-term health problems. The findings suggest that on-line access to both a peer group conference and to the services of an educational counsellor in a 'Virtual Campus' environment could start to address barriers that might discourage students from beginning or continuing to study: difficulties with handwriting, physical and psychological isolation, access to educational support services and fatigue.

The role of the peer-group conference is considered to have been pivotal to the success of this study. It provided both an empathic on-line community for mutual support and an environment in which sensitive questions could be raised with an educational counsellor. Moreover, it provided a gentle introduction to participation in the wider world of open conferences on a 'Virtual Campus'.

Whilst it is not possible to draw generalised conclusions from the results of a small exploratory study, the experiences of these students suggest that the use of computer-mediated conferencing may hold considerable potential as a tool to aid educational support for those with disabilities. In an area where little previous work has been undertaken, the findings contribute some benchmark data to the field of disability studies. They also add to the body of knowledge in the wider fields of CMC and educational advising.

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