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Sullivan, T.J., Universiti Brunei Darussalam, Negara Brunei Darussalam Establishing and Sustaining School Leader Networks through Computer Supported Collaborative Learning

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ABSTRACT

Two goals of the university's postgraduate programme in educational management and leadership is; (a) to establish a learning support network amongst each cohort in order to stimulate ease and openness of professional sharing and so enhance course learning; and (b) to promote sustainable school leader networking in the field.

'Moodle', a recently introduced computer supported collaborative learning (CSCL) technology, uses asynchronous discussion forums to create opportunities for professional and social support which are intended to complement face-to-face meetings. Such discussion forums are immediately helpful for providing personalised advice when needed ('just for me; just in time' support) to the school leaders who have been away from tertiary study for some time and have grown unfamiliar with juggling personal, professional and student life.

Long term, these discussion forums will hopefully stimulate the school leaders to establish and sustain their own online forums once their study is completed and they are back out in the field. Such an 'anywhere anytime' support network would be especially helpful for newly appointed school leaders and those in isolated areas.

Appropriately moderated asynchronous threaded discussions that are interspersed with face-to-face meetings require a teaching methodology that emphasises active student-centred problem-based collaborative learning, in order to improve discussion structure and team problem solving, and develop a communal sense of professional learning.

This same innovation also supports the university's partner, the Ministry of Education, by helping it establish professional knowledge communities amongst school leaders at cluster and district levels in order to align systemic vision and school-based improvement action plans.

This paper contains; a rationale for using an online professional discussion forum to establish a hybrid professional community of practice; a description of the 'moodle' technology; establishing the technology in and existing on-campus leader development course; ensuring a positive initial response to the technology; and efforts to sustain the hybrid school leader support network.

Keywords: moodle, computer supported collaborative learning (CSCL); moderated asynchronous threaded discussions; hybrid professional knowledge communities; communities of practice; sustained collaborative professional support networks; distributive management and leadership; systemic alignment.

INTRODUCTION

School leaders are the key drivers of school improvement and to align improvements across an educational system, it makes sense that they stay aligned in their vision and development strategies.

By forming their own district and cluster school leader networks, school leaders can develop a sharing culture built on trust and effective communication to cooperatively imagine aligned visions and collaboratively realise their aligned goals (Kochan and Reed, 2005).

However, due to the impact of administrative commitments, the school leaders in Brunei Darussalam meet to discuss administrative matters rather than to work as a team on any particular school or systemic improvement project or to improve themselves via professional sharing.

This administrative rut does not have to be the case for these professional educational leaders. By incorporating asynchronous threaded discussion forums that are interspersed with face-to-face meetings, the school leaders can collaboratively plan and execute team projects, seek support from diverse experts locally and even internationally, work across isolated rural areas, and communicate at a time and from a place that conveniently matches each school leaders' busy daily schedule. Such a group working collaboratively face-to-face as well as online is called a hybrid community.

The technology used by the particular hybrid community discussed in this paper is an open-source course management system, also called learning management system. It is called 'moodle' (Moodle Homepage, 2008) and incorporates the full range of useful facilities that are required to conduct a full course including a repository for course content materials, assignments and individual and group tasks, asynchronous discussion forums and synchronous chat functions, as well as assessment facilities and student databases.

RATIONALE FOR THE USE OF A HYBRID LEADER DEVELOPMENT FORUM

The school leaders participating in the particular hybrid community that is discussed in this paper were involved as part of their coursework in a postgraduate course on educational leadership. They were being introduced to hybrid professional communities for the first time and it was the hope of the coordinator of the programme that they would have a positive experience and would appreciate the potential opportunities available to them if they formed hybrid school leader networks amongst their cluster or district groups once they finished their postgraduate programme and were back as practicing administrators in their schools and in Ministry.

Deployment of a hybrid professional community over other forms of discussion groups was chosen because they were beginner level online discussion forum users and needed the face-to-face contact to maintain the professional relationship and to collaboratively solve any technical problems associated with using online environments. The asynchronous form of online discussion was implemented because their work environment is often characterised by busy daily schedules and diverse geographical locations. Lund (2004) points out that physical proximity in face-to-face communication and teleproximity as in asynchronous online communication both influence the each other and both create a sense of group awareness in hybrid discussion forums.

In face-to-face meetings, the school leaders were well prepared to be candid, sociable and simultaneously more focused on the meeting tasks. However, their online communication was mainly limited to email or use of the telephone. The hybrid format allowed them to familiarise with online discussion forums whilst simultaneously being able to strengthen the discussion and solve any difficulties with the online process during face-to-face sessions. The importance of this socio-emotional process is supported by Kreijns and Kirschner (2004) in their argument for developing a sociable technological design into discussion forums.

During their usual workplace face-to-face school leader meetings, their district officers reported that their communication with other school leaders was mainly composed of administrative tasks rather than professional sharing and growth. Presumably this was because they have so much administrative business to discuss and so little face-to-face communication time for more professional development matters, due to lack of regularity of meetings because of geographical isolation.

Lund (2004) reported that the opportunity to use asynchronous online forums can alleviate these hindrances because of the nature of human support that is provided in such online forums. Online communication allows the school leaders more time because they can choose to communicate at a time and a place that suits them. Asynchronous communication usually involves weighing up the topic and putting forward a considered view making the process toward knowledge production and sharing more efficient and effective. This results in the school leaders having more time to complete their administrative tasks and move on to the important professional sharing communication.

Kreijns and Kirschner (2004) point out that the hybrid discussion forum can incorporate real-life problem solving opportunities, along with a direct knowledge, skill and relationship link with other colleagues leading to professional sharing and interpersonal relationship development in organisations. The hybrid format allows face-to-face opportunities to physically interact and develop their practical leadership capacities and to continue such leadership teamwork online. Online discussion forums also permit a non-confrontational environment for sharing their reflections on their leadership growth and thus reinforcing and further enhancing individual and group development. Such practical knowledge and skill development is considered essential to current approaches to leadership development.

COMPUTER SUPPORTED COLLABORATIVE LEARNING (CSCL) – MOODLE

The technology used to support this particular hybrid leader development strategy in a freeware open-source product called Moodle (Moodle Homepage, 2008). Moodle is a course management system that has been based on a constructivist teaching and learning approach. This means that its facilities support a learner-based approach to carrying out tasks. It is also social constructionist in that it supports collaborative learning and task completion through its member accessibility and the openness of its asynchronous discussion forums. Such a pedagogical design made it appropriate for use in supporting a small group of school leaders in their attempt to extend their collaborative issue discussion sessions, decision-making, problem-solving and general professional and personal support online so that they can access each other as a group anytime anywhere and even invite outside experts into their group if need be.

The Moodle course management system is open source software and is free. To initiate a course coordinator or group leader simply needs to download the programme from the Moodle site and set up space on a server that supports the Moodle software. If the company does not have access to its own server, it costs very little to rent server space on a commercial server that supports Moodle and there are many such servers available on the internet, one being <http://www.hostmonster.com>. Because the server is on the internet, all data is stored on the internet which saves storage space on users' private computers. As well, access is available 'anytime anywhere' to the internet website.

Moodle is a relatively easy to use learning management system. Its graphical user interface (GUI) functions similar to Microsoft Windows © products and so appears familiar from the initial use. This makes readiness for use relatively simple. Each participant simply logs on to the Moodle site that is prepared by the course coordinator, reads the particular weekly topic and instructions and initiates or adds to the topic discussion and carries out any required tasks, and then logs off.

Being open source software means that many practitioners are continually offering suggestions and improving the programme so that its design structure is continually becoming more user-friendly, practical, effective and efficient. The programme is intuitively and logically designed for administrator usage in preparing, teaching, resourcing and evaluating courses. It is also intuitively and logically designed for participant usage in individual and collaborative learning, interacting and forming relationships online.

The online site is password secure. This makes the online activities open only to the administrator and the participants. Discussion content is only available to the administrator and participants of any

particular group. Assignment and emails are only for those intended. Participants should feel confident in being able to participate openly and thus build trust amongst their group. This sense of security also helps bond the group and supports a sustained school leader network.

HYBRID LEADER DEVELOPMENT STRATEGY

In this particular hybrid course in practical leader development, there were four set activities on a set topic each week. During any particular week, there was a face-to-face lecture by the coordinator, a face-to-face participant-led seminar/discussion, an online asynchronous discussion forum, and a reflective summarising task, which was called the reflective diary of leadership learning and was uploaded by each participant.

All four activities focused on the same set leadership topic which changed each week. The course catered for individual learning styles because, each week, the students experienced four different learning styles. For example, the first weekly topic was 'Visualising Leadership'. This particular introductory task required each participant to visualise the leadership qualities of well known leaders whom they respected and discuss what characteristics and style made this person respected.

At the end of each week, each participant reflected on and summarised their group's understandings and opinions on the topic and uploaded a one page written word document to the course coordinator who is called the forum administrator. Upon completion of the fourteen week course, the participants collated their fourteen weekly discussion summaries and uploaded this as one of their course assignments. This reflective summarising task was the reflective diary of leadership learning.

This weekly procedure was repeated each week covering fourteen leadership topics. Content-wise, the participants covered fourteen leadership topics during the course. However, just as importantly, process-wise, they repeated the online experience of personally and professionally participating in an online professional learning and problem-solving school leader network at least fourteen times.

This experience was complemented in the face-to-face learning context with the course coordinator initiating on-campus discussions on what, how, and why, the school leaders were participating in the online discussion forum. This meta-learning was carried out in order to connect the forum experience with the programme goal to establish and sustain school leader networks as part of their usual school leader cluster and district groups once back in their schools.

ESTABLISHING POSITIVE INITIAL RESPONSES

Research by Kreijns and Kirschner (2004) and Lin and Overbaugh (2007) shows that although the utility of asynchronous online discussion forums is obvious, the communication format lacks much of the social context required for effective collaboration.

Although a social context was generated to a certain level online, the course delivery established an initial positive response via a hybrid face-to-face/asynchronous online environment by beginning the professional discussion forum face-to-face and following-up with an online format. In this way, both environments sustained each other.

In the leadership course, participants were encouraged to use the possibilities that are built into the design of the hybrid discussion forum to maximise ease of use and to gain maximum leverage in collaboratively achieving their quest for leadership growth and course task completion.

The coordinator provided a user friendly learning environment with both support and challenge through the technology. Computer supported collaborative learning (CSCL) facilitated the communication of knowledge and the construction of knowledge. Such an approach allowed greater

relevancy to all members due to the use of different learning styles, greater divergence of discussion resulting in more perspectives on the topic and thus a fuller meaning and understanding of the topic.

The technology also created a common environment which acted as a common platform for discussion. Knowledge and learning was generated from a process of individual and group critical self-reflection. The instructor designed a threaded discussion topic with a central theme in which several related questions were posed and the resultant discussion flowed across multiple threads toward a synthesised solution that reinforced communal growth.

The educational leaders in the postgraduate programme are relatively basic users of ICT. Kochan & Reed (2005) believe that such participants need to know and appreciate the benefits of using online technology to dialogue with colleagues via asynchronous discussion forums in order to accept using the technology. The Moodle technology is simple to learn, easy to use and allows professional working with colleagues anytime and anywhere, thus easing the pressure of too frequent face-to-face meetings.

Regular face-to-face technical discussion sessions on the use of Moodle were required to loosen the usual formalities which surrounded these leaders and enable better understanding of online usage technicalities and appropriate social and language forms. In short, the school leaders were taught how to use an online discussion forum. These discussions helped alleviate foreseeable hindrances and promoted a motivational sense of team challenge.

In order to appropriately match the learning with the challenge, course workloads were modified to match participant progress as the course developed. Face-to-face seminar work was moved to online discussion work which had the effect of intensifying online professional learning experiences whilst lessening the length of scheduled face-to-face meeting times. The hybrid format allowed for a more effective use of time by the school leaders and also the coordinator. The school leaders came to understand and appreciate an immediate benefit of learning and using the new technology when they first experienced its ability to sustain their face-to-face problem solving through asynchronous anywhere, anytime virtual meetings. This was especially true of the leader from another town who was more isolated by distance than the others.

The participants were also strongly urged to expand their learning potential from individual learning to group learning so that they could also identify and take collaboratively action on practical leadership issues in their workplace. The online component acted as an extension of the on-campus learning environment with the convenience of shared asynchronous response and interaction leading to group learning.

In agreement with Vonderwell et al. (2007), a sense of comfort with the online discussion technology emerged because it allowed introvert and extrovert students to participate equally in the group. This development was supported and encouraged by the coordinator who held group and one-to-one discussions with participants on the need to use their communication and status power harmoniously and pastorally for the good of the group.

The participants learnt to communicate online with trust and respect for each other's point of view. The added online dimension to the group interaction helped the members see more aspects of their own and each other's professional and social personalities and thus enabled more learning about leadership qualities.

As with face-to-face discussion, some participants tend to talk and others tend to respond to them more so than others. This referential power is not as evenly spread as a casual observer might think. This was true even when the moderator attempted to equally spread the communication flow by manipulating the threaded discussions. Some members simply have a greater social presence offline and online. They become a 'communication hub' within the social network and most communication

tends to pass through them. Members who were identified as communication hubs were asked to reflect on their leadership responsibilities and to purposefully take on the responsibility of group harmony and cohesion. This responsibility was a learning experience in leader development that was purposefully built into the course.

SUSTAINING POSITIVE RESPONSES

The main objective of the professional discussion group was to develop sustained educational and social functionality as a collaborative school leader network for professional practice. Hybrid environments can be purpose-designed to support such social interaction by scaffolding the social communal space with trust and belonging, along with ownership of group tasks. Collegial bonding is achieved through setting group tasks rather than the discussion of simple closed topics.

Education is a social process that requires a communal learning space which recognises the need for learners to engage with each other in reflective collaborative dialogue. The coordinator encouraged such learning by shifting the members' leadership practices toward a distributed leadership through peer learning and scaffolding in hybrid discussion forums. In turn, the resultant distributed cognition which emerged from the interactions of all group members in the online social environment also developed healthy distributive leadership qualities (Angeli, 2007).

Intellectual cognition is very much connected to the social context. For group intellectual dialogue to progress and for the group to achieve its goals and complete its tasks, the dialogue must be supported by a sense of group achievement and motivation. Each member needs to feel the convergence of the discussion threads on the group goal. It is the emotional sense of pleasure derived from the act of communication and team success and the bonding of relationships through interaction that stimulates and sustains further networking.

New knowledge was shared face-to-face within the group at the end of each weekly cycle of dialogue. Meanings or styles of argument and distributive leadership practices were clarified through usage rather than explicit definition. These practical knowledge and skill development objects of learning sustained the network group by expanding the common ground amongst the group members.

Throughout the course, regular lectures and discussions were held on the usefulness of workplace hybrid networks with colleagues in districts and clusters for the purpose of collaborative problem solving, professional sharing and development. They also discussed their preferred structure of these workplace networks.

The group decided that their immediate superiors, the district or cluster educational officers, should be the official moderators of workplace networks because they currently conduct their face-to-face meetings and the online network would be an extension of those meetings. However, the course coordinator pointed out that in an ideal school leader network, any member with the appropriate leadership and communication skills, called a communication hub, could take on the role of moderator.

Hubs are members who naturally lead and direct the discussion. Others respond to them because of their leadership display not simply because they may hold a respected face-to-face social position. Most groups have many hubs. Interestingly, a study by Ravid and Rafaeli (2004) demonstrated that, although the moderator was certainly one of the communication hubs, only 20% of hubs were official moderators. The other 80% were simply motivated communicators with something to say. Moderators are hubs who set tasks and monitor the work progress and communication whereas the other hubs tend to direct the communication only.

The group was asked to consider how they could identify and give recognition to communication hubs in their current group and also in their future workplace group.

It was agreed that communication hubs could be recognised by the fact that they provide feedback on the quality and direction of the dialogue and weave the threads together so as to guide convergence of dialogue. It was agreed that the main role of communication hubs is to play deciding roles for various threads of communication and carry out repair processes so as to maintain and sustain a communication network.

In comparison, it was agreed that the moderator's role is to set tasks and to encourage the other 80% of hubs who are members to keep the communication on track. Moderators also carry out a contextualising function by welcoming and introducing group members and setting the rules and atmosphere of the discussion forum so as to prepare the members for an engagement with the appropriate level of intellectual rigor and social harmony.

Whilst these specific in-group strategies help to sustain a positive response to network membership, Silvers et al. (2007) believe that the ultimate global strategy in sustaining the positive responses is to consistently and persistently work toward developing a mature hybrid network community. Salmon (2004) outlines five stages toward maturation:

In stage one, the participants must familiarise themselves with the technology and gain enough confidence to be motivated toward discussion. They must be taught to use the technology. Fortunately, the participants were a small on-campus group. This opportunity for face to face discussion greatly supported the success of their online discussions. The moderator used this opportunity to solve personal and technical problems amongst the group.

In stage two the participants must familiarise themselves with each other's online personality which can have a different characteristics to their usual face to face discussion personality. They need to get to know each other via the sending and receiving of messages. They need to compare and discuss each other's experiences in online and in face-to-face meetings.

In stage three, the participants begin focused information exchange and true collaboration. They must be taught how to construct argument and debate on set topics via an asynchronous conceptual thread so that their communication is just as candid and spontaneous as in their face-to-face meetings. During the face-to-face sessions, the moderator tweaked the human support factor by encouraging a sociable on-line communication style rather than an impersonal professional academic style and setting tasks that required giving help to at least one other member.

In stage four, the participants begin to debate points of view and progressively construct knowledge through common understandings relevant to the initial thread or topic. Further encouragement to engage can come from the facilitator setting group action research tasks and controversial debate, rather than simple individual research work.

In stage five, the participants reflect more on the direction on thread development in the topic under discussion. Rather than simple sharing of points of view, the group needs to move with a purpose toward a clarification of certain concepts and then on to a decision and commitment to best practice. The moderator and communication hubs must carefully follow the communication and interaction flow and decide when and how to input into the discussion group.

HYBRID LEADER DEVELOPMENT LIMITATIONS

Xin and Feenberg (2002) emphasise that the written communication contribution to discourse online lacks all the non-verbal cues of off-line communication. At best, each contribution to discourse develops through a process of presentation by one member and hopefully recognition of understanding and acceptance or counter-argument from another. This staccato effect severely limits the sustainability of the flow of topic along interest and innovative threads.

The asynchronous nature of the communication dynamic further increases the probability of misinterpreting other members' responses. Often in critical argument we make a statement based on a host of immediate non-verbal and verbal responses. Then, in retrospect, we may correct our comments and reframe it. This is called discourse repair and is essential for sustaining the dialogue until completion of the task.

Even though most asynchronous forum learning management systems have a short built-in cooling-off period in which a participant can edit and change their communication, (Moodle cooling-off period is 30 minutes), once a message is sent asynchronously online, after that short period it cannot be revoked and so easily repaired. Already there may be new threads being created that could be undermining the social context as a result of a member's comment. Already members may be losing interest or dropping out due to misinterpreting a particular contribution to discourse.

These seemingly disruptive and destructive characteristics can be overcome by managing the communication to incorporate reflection and meta-learning about the set group task and the technological and social experiences of being in the learning environment. Lund (2004) believes that the preventative strategy is to learn to emphasise social as well as professional performance when attempting to arrive at a solution to a set problem task.

A further failsafe device which is built into most online discussion forum software is the ability to edit one's posting up to thirty minutes directly after posting. All members should clearly understand and remember to use this failsafe device, if on occasion, the preventative strategy of employing well thought out and socially responsible professional communication fails.

Finally, skilled moderators and communication hubs can ease and sustain the communicative process through a series of attempts to verify, repair, and confirm the subject of discussion. If their repair work is successful, then each cycle results in an enlarged shared understanding and group convergence. However when the communication hubs are unsuccessful, the process can result in group deterioration.

Besides the nature of the communication process taking place in online and hybrid networks, another severe limiting factor is the capacity of the members to fully appreciate the potential that such technology has in providing genuine distributed leadership in schools through establishing support networks where school leaders can turn for advice from other school leaders and experts anywhere in the world and not just their local colleague or supervisor.

Perhaps the participants will discover enough reason to instigate their own workplace online networks. However, upon return to the workplace, the daily routine of leading their own schools, their changed professional and personal responsibilities, and having to confront different relationships in different school leader networks, could be too much change at one time and force them to scale down their networking plans, thus severely limiting a potential source of professional and personal support.

The leadership course has only recently been redesigned as a hybrid delivery and only with the current cohort of four school leaders. Although the four school leaders have deemed it a success so far, the coordinator's ulterior course goal of encouraging online workplace school leader networking after the course is yet to be fulfilled. The communication environment is new to most of the school leaders and they need to be consistently and persistently encouraged to use its potential to achieve expanded levels of capacity that were previously unattainable.

HYBRID LEADER DEVELOPMENT CONCLUSIONS

Hybrid collaborative task and support networks featuring asynchronous 'anytime anywhere' communication channels can greatly improve the effectiveness of mentoring newly appointed school

leaders who often need quick simple advice in their early day-to-day decision-making. Accessibility to other school leaders is greatly increased amongst geographically isolated school leaders and those who cannot always attend meetings because of specific idiosyncrasies in their workplace. The capacity is even there to include outside experts in their discussions. These invitees could be other educators in the system, university educators or fellow school leaders and experts from other countries.

Such hybrid networks are also a boon for those school leaders who are involved in work committees or are simply interested in peer professional learning. In many cases the hybrid format promotes improved discussion structure by allow all members to have their say, which does not always happen during face-to-face meetings. However research is needed to understand and improve the online and offline efficiency and effectiveness of communication hubs and moderators.

If moderated effectively, hybrid discussion forums can also help keep systemic vision aligned across school leader networks. However District and Cluster Education Officers still need to act as Ministry-based moderators and monitor school-based improvement action plans.

In order to extend uses of the established discussion network outside the confines of the course and into the members' day to day professional lives, one overarching discussion topic must be to consider ways in which the discussion group members can eventually begin to explore the potential of their course discussion group as a professionally supportive and socially caring environment.

Three 'hard-to-resist' enablers for success are; (a) 'professional content' where members can collaboratively learn from the fruits of their combined professional practice; (b) 'professional and social confidence' where the improvements in professional and social performance can become a motivational trigger for members to sustain their hybrid school leader network; and (c) 'effective professional connection' where a local school leader network has the ability to invite school leaders and expert academics from anywhere on the World Wide Web to collaboratively problem solve and professionally develop.

REFERENCES

- Angeli, C. (2008). Distributed cognition: A Framework for Understanding the Role of Computers in Classroom Teaching and Learning. *Journal of Research on Technology in Education*, 40(3), pp. 271-280.
- Kochan, F.K., and Reed, C.A. (2005). Collaborative Leadership, Community Building, and Democracy in Public Education. In F.W. English (Ed.), *The SAGE Handbook of Educational Leadership. Advances in Theory, Research and Practice* (pp. 68-84), SAGE Publications, Thousand Oaks, CA.
- Kreijns, K., and Kirschner, P.A. (2004). Designing Sociable CSCL Environments. Applying Interaction Design Principles. In J.W. Strijbos, P.A. Kirschner, and R.L. Martens (Eds.), *What We Know about CSCL and Implementing It in Higher Education* (pp. 221-243), Kluwer Academic Publishers, Norwell, MA.
- Lin, S.Y., and Overbaugh, R.C. (2007). The Effect of Student Choice of Online Discussion Format on Tiered Achievement and Student Satisfaction. *Journal of Research on Technology in Education*, 39(4), pp. 399-415.
- Lund, K. (2004). Human Support in CSCL. What, for Whom and by Whom? In J.W. Strijbos, P.A. Kirschner, and R.L. Martens (Eds.), *What We Know about CSCL and Implementing It in Higher Education* (pp. 167-198), Kluwer Academic Publishers, Norwell, MA.

Moodle Homepage (2008). Modular Object-Oriented Dynamic Learning Environment. Retrieved from the internet July, 2008: URL: <http://moodle.org/>

Ravid, G., and Rafaeli, S. (2004). Asynchronous Discussion Groups as Small World and Scale Free Networks. First Monday, 9(9). Retrieved from Internet, URL: http://firstmonday.org/issues/issue9_9/ravid/index.html

Salmon, G. (2005). Moderating. The key to Teaching & Learning Online, RoutledgeFalmer, London.

Silvers, P., O'Connell, J., and Fewell, M. (2007). Strategies for Creating Community in a Graduate Education Online Program. Journal of Computing in Teacher Education, 23(3), pp. 81-88.

Vonderwell, S., Liang, X., and Alderman, K. (2007). Asynchronous Discussions and Assessment in Online Learning. Journal of Research on Technology in Education, 39(3), pp. 309-328.

Xin, C., and Feenberg, A. (2002). Pedagogy in Cyberspace: The Dynamics of Online Discussion. Retrieved from Internet: URL: http://www.textweaver.org/xin_dissertation.pdf

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