Creating a community of learners online and offline in teacher education

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Abstract

This study focuses on a university college program in special education using Internet groupware to establish a community of student learners' on- and off line. The study focuses on one group of four students, while it gives attention to a larger group of 35 students, during their six weeks intensive project work. Data sources were: transcripts of students' Internet exchanges related to the task; the students' assessment reports; and an interview with one subgroup. The analysis revealed five phases in the students' progression towards developing a community. Each phase comprised the nature of the task, the media used in communication, and the relationships that were established. The findings show that each phase scaffolded the learning process, and the creation of community and how each phase structured the conditions for subsequent phases. The analysis reveals how the online interactions gave rise to meaningful face-to-face conversations that in turn facilitated more reflective and sophisticated online exchanges. These online and face-to-face interactions assisted each other and enabled the students to claim their voices from the multiple voices from diverse special education practices that were sounded through the whole process. The end result is a community of learners in special education whose individual voices pulsate through a collective process.

This is a study of a yearlong university college program in special education using Internet groupware (BSCW: Basic Support for Cooperative Work) to establish a community of student learners online and offline (face-to-face interactions) (Fottland, Matre, Weidemann & Bjørkeng, 2001). BSCW groupware is a tool that enables users to take part in Net-based asynchronous cooperation, and it was introduced in this particular program to enable students and teachers to cooperate via the Net even when they were not in the same place at the same time. BSCW provided every one of the students and their teachers with the possibility of facilitating a "shared workspace," a virtual open office landscape, where they all might participate. It further allowed the various participant groups to create their own small virtual room within this landscape, restricted to the diverse work assignments that were to be undertaken. The BSCW structure also allowed the users to download documents, to participate in work processes where documents were formulated and processed in a community before finding their final form, to announce events, to administer group cooperation, to arrange and carry out meetings, to give responses of various kinds to each other, to add notes to the texts of others, to form discussion groups, to create hyperlinks, and much more.

The BSCW system has a *hierarchical folder structure.* First, a simple main structure was established. Various student groups that were put together during the studies were allowed to create special folders and subfolders within the framework of this structure, based on their own wishes and needs.

In this study I have looked at the degree to which the specific application of the BSCW tool on communication between college students and

teachers/supervisors regarding relevant special education issues, has contributed to academic progress and improved awareness of students. I took hold of two perspectives, the supervisor's and the researcher's. My initial, overarching aim was twofold: In my supervisor role I wanted to influence the knowledge building within the group. As a researcher I searched for better insight into the students' learning processes and professional development related to a combined use of an ICT (Information and Communication Technology) online communication medium and face-to-face interaction.

This piece of writing focuses on one of the students' BSCW groupware tasks, which was to carry out a project. This project included generating research questions from the special education practice, collecting data from this field and writing the final project report.

Methodological Approach

Sample

The focus is on one group of four students, while it gives attention to a larger group of 35 students (who were also divided into smaller groups), during their six weeks of intensive project work. Each of the groups was supervised by a permanent teacher/researcher during the entire project period. I was supervising the four-student group, which is selected for the current presentation. All the members in this group were women in their 30s. Three of them had practiced teaching several years before taking on studying again, whilst the last one had been working as a car mechanic before she started teacher education.

This subgroup was chosen because its participants stood out as the most active in the online exchanges. I found collaboration data from its members to be particularly interesting and illustrative when it comes to documenting students' knowledge development and to understanding what goes on in learning communities using both online and face-to-face mediating tools.

I underline that this is a "best case" scenario. I have no intention of giving a generalizable report about what happened in all the student groups. My purpose is to reflect on how the subgroup's experiences testify to the potential of Web technology to enrich and extend a learning community. By being acquainted with such success stories teacher educators can obtain important knowledge about how to improve their future teaching.

Data collection and data analysis

Data sources were: transcripts of Internet exchanges between students and me, the students' concluding evaluation reports, and an interview with the core group. I have examined this group's various BSCW texts, which were developed on Internet throughout the project period, their evaluation reports of the process, and transcripts from my interview with them. In the analyses I have looked into: (1) which subject matters these four students were interested in and motivated to discuss, (2) what the professional content of their discussions was, (3) how their discourse functioned by means of participation frequency, (4) what it was that characterized the group's communication style and structure in due course, (5) in what degree the group's on- and offline conversation reveals that the students' professionalism had been stimulated and developed during the period, (6) what the

students learned from their experience, about special education themes and about how to communicate on the Web, and lastly (7) to what extent they experience that the combination of face- to face and online communication have facilitated their learning processes.

Taking these aspects into consideration throughout the whole interpretation process, I found enlightening analytical units emerging, providing conversation categories, which were specifically interesting in terms of stimulating learning processes within special education students. These analyses, based on units of analyses from socio-cultural theory (Vygotsky, 1978), dialogic, meaning-making theory (Rommetveit, 1974, 1990; Bakthin, 1981) and activity theory (Engeström, 1990, 1999; Wells, 1999), as will be illustrated distinctively later on, revealed five phases in the students' progression.

Presentation of findings

Below I shall summarily describe what specifically occurred in the designated project group during these five phases. I primarily focus on the first and the third phase, because these two stood out as the most important ones. What happened here clearly documented that the ICT groupware medium brought something new into the communication between the participants.

I will give a few illustrations from the students' final evaluation reports and from the closing interview, to highlight the outcomes related to these two phases. Furthermore, I will attempt to explain in more theoretical terms how what occurred in all the five phases came to influence the learning development of the students.

Phase One: Situation Definition of the Learning Environment

(1) The nature of the task.

In the initial phase my role as a supervisor was to help the students to start as effectively as possible on their project work, by using BSCW online and using group discussions offline. The group members needed to create a common in-group understanding of what the assignment involved and how to proceed to solve it. To manage this, they had to overcome initial difficulties of both a technical and psychological nature.

Extract from the students evaluation reports:

Student 1: I was kind of scared because I have never before used ICT. But I had no choice. I just had to throw myself into it. Anyhow I indeed felt that it was pretty difficult in the start phase. But soon after we started it all went on really fast, because I just had to deal with it all to be able to hang on.

Student 2: I felt it was easier to cope with my own missing ICT skills when I found out that the other group members also were novices on the World Wide Web. The group's regular face-to-face meetings were especially important in that manner, because after a short while we felt free to talk about all the BSCW problems which arose. Together we decided to try the best we could, no matter how stupid we felt sometimes. We planned how to

work it out, and we spent a lot of time to try out the groupware's opportunities.

Moreover, the students needed to develop collaboration procedures that would work and they also had to strengthen their own foundation in the subject and gain an understanding of the academic basis of the other group members.

Extract from the interview:

Interviewer: What options do you consider were the most helpful ones within the Internet groupware possibilities when it came to facilitate your collaboration processes and professional progression?

Student 4: It was so important for our course of action to have this chitchat place, which we used to talk about everything that happened in our lives, both personally and professionally. We got to know each other well, and we became safe, and confident group-members through chatting within this folder without restraint from the start and all the way throughout the project period.

S2: We were having face-to-face "gossip only - clear up and head forward – meetings," regularly stuck between our almost continuously chatting on the Net. I am sure these procedures, which were not so serious in the initial stage, functioned as groundwork exercises assisting us on our way to discuss more philosophical questions.

Last but not least, it was imperative for the students to establish a clear cooperative relationship to me, their supervisor, in a way that could function positively throughout the project period.

Extract from the interview:

S1: I believe I initially was kind of insecure about your (the supervisor's) role in this project work. I suppose I also was pretty unsure about myself. Should I dare to contact you about this specific question? Wasn't it too silly, shouldn't I fix it myself, and so on?

S3: In the start phase I was somehow unconfident about your capacity, whether I could use your time as much as I felt we needed.

S2: We didn't know what to expect from you when we started, you know, we had never before had a "Net supervisor."

S4: I decided to take my chance, from the starting point, because I remembered that when you introduced the BSCW system, you told us that if we communicated and asked questions on BSCW, then we could get all the supervision that we felt we needed.

I: So, that's how you felt it. I have to admit, now in retrospect, that I was pretty insecure about my supervisor role, too. The BSCW structure was new

for me also. I had barely learned to use it. So we had to try it out together. And, happily, we found our way of doing this. I felt that, after a while, the Net communication became natural to make use of for all of us, don't you think?

All students: Yes, mm.

S2: And how busy bee- like we communicated after awhile, day and night, as if we had been doing Net dialogues all our lives.

S1: It all became so natural.

(2) The media used in communication (online or face-to-face)

The students used various types of online and offline communication media. Their attention was primarily focused on learning and practicing how to use BSCW. They posted Word texts, gave each other feedback and used the discussion opportunities and the ability to download relevant information from the Net. Furthermore, they had regular face-to-face group conversations, and meetings with me. The students also phoned each other regularly.

(3) The relationships that were established

During this period the group was established as a serious, working project group with a clearly defined common purpose. The group members made sure they knew how to use BSCW as a communication medium, and they decided which other ways of communication they would practice. They decided how to communicate with each other and how to conduct themselves in relation to external readers and writers within the class. They distributed roles and developed rules to apply, and decided how to cope with the class. Moreover, their relationship to me, their professional supervisor was established.

Closing Interpretation

The students and I established a committed relationship in this first phase. We learned a lot about where to put our energies, whom to trust, where our best feelings come from and how to develop common knowledge in proper ways. Putting it in other words: We developed a defined *learning community* (compare Rogoff, 2001; Wells, 2002). We got to know each other pretty well. We came to an understanding about rules to work by. We developed a commitment to each other and agreed for a shared program.

A good metaphor for this is that the foundation of this group's "house of learning" was built. With the benefit of hindsight, my assessment is that during this phase of situation definition, the students created a small activity system, an activity pyramid consisting of four triangles (see Figure 1). *The project group members*, their defined goals connected to the *project task*, and the various *mediating aids* they used for online and offline communication may be placed in each corner of the uppermost triangle. This little learning community related to a larger learning community, to the *class* and to the rules and stipulations they all were furnished with, by teachers and supervisors, and also to the rules they themselves agreed to practice. The remaining

corners of the other triangles have therefore been marked with these. To summarize, we can say that intersubjectivity (Wertsch,1984) and a common situation understanding within our sample group's activity system was instituted. The emphasis was on developing the system, becoming familiar with it, and developing confidence that this could work as the point of departure for further learning throughout the project period.

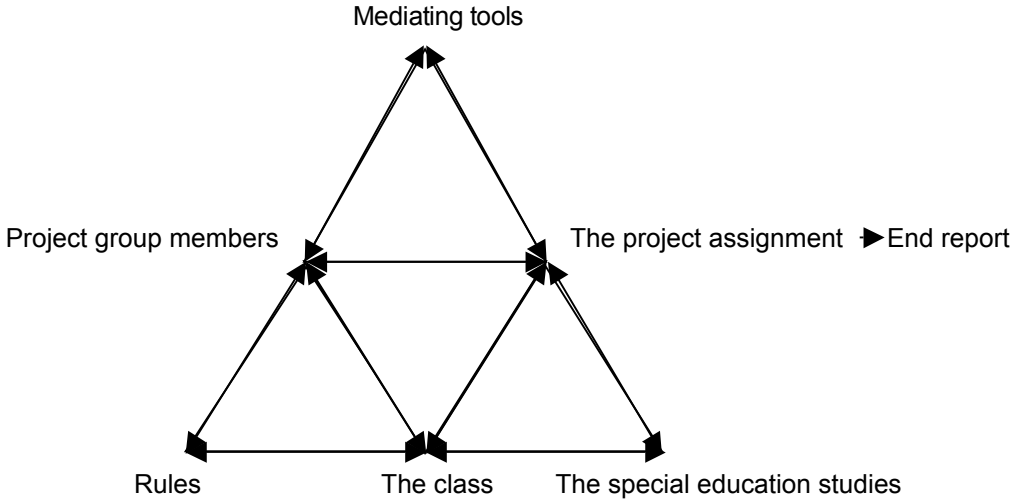

Figure 1: The project group's activity system, using Engeström's (1990) model of an activity system.

Phase Two: Writing to Learn

The main task during this phase was to actively adopt the ICT groupware medium for writing in developing ways. The students needed to shift from "writing with paper and pencil" and using a word processor inside the framework of small closed rooms, to BSCW writing in bigger "communication rooms." They needed to actively practice both writing to think and writing to communicate (Hoel, 2001) using the BSCW medium in ways which would help them to mediate semiotically (Wertsch, 1984). The first step was to write to create meaning for themselves, the second to communicate with external readers and writers (compare Bakthin, 1981) in order to develop and agree on collective ideas within temporarily shared social realities (Rommetveit, 1974). Writing in both these ways thus supported the students' work and learning development.

Internal social ties in the project group were strengthened and consolidated, while the relationship to the large class group was clarified and relaxed. The group members gained more self-reliance as thinking and communication writers, and they developed trust in each other as recipients, both in relation to the new technical aid and to the interlocutors in the network. Thus the connecting lines of the learning community in their activity system were strengthened.

In the writing-to-learn phase the main pillars of the scaffolding for this student group's house of learning were raised in a quite sturdy manner. This was accomplished by consolidating the uppermost triangle of the group's activity system, while overview, trust, and confidence were established in relation to the other dimensions of the system. However, their house of learning was far from

finished yet, and the students thus naturally moved to the next phase level to improve and strengthen their structure.

Phase Three: From Written Interaction to Conversation (Online and Offline)

(1) The nature of the task

The principal group task at this level was to produce and maintain a broad targeted academic discussion on the project research questions. The group deemed it essential to collect relevant debate material from their supervisor's field of knowledge and from the sphere of experience of its co-students. Moreover, they listened to and entered into online and offline verbal exchanges with imaginary, "theoretical voices" from the social and cultural context they were in within their special education studies (compare Bakthin, 1981). Additionally, the students honed their own "discussion voices." They balanced these various voice dimensions in a way that contributed to efficient project progress.

Extract from the students' evaluation reports:

S2: BSCW in a way opened a new world for me, and this undeniably was a valuable globe to inhabit. I have made a large profit by getting acquainted with this world's communication opportunities and by using many of these possibilities myself. I always obtained speedy responses to my written wordings from significant classmates and I read and replied to their texts. Subsequently I changed my texts, sent them out on the BSCW Net again, and got hold of new, quick, encouraging reactions from supervisor and group colleagues. It inspired me to be able to contribute to my own group's dialogues with research-based arguments and personal points of view. Additionally, I liked and learned a lot from trailing both my own and the other groups' professional conversation tracks on the Web.

S1: I have to underline that although our Net-conversations were essential for us by means of learning development, we must not forget all the meetings we arranged for sitting together in the same room. We saw each other's faces. We were able to go deeper into themes discussed beforehand. We might interpret and respond to the group-mates body language and grimaces simultaneously as we heard their spoken words. And all these occurrences subsequently influenced positively our collaboration online. The BSCW work was in a way affected by our face-to-face experiences as well. We put emotional expressions in our online writings, and we used passion symbols, which were accessible within the BSCW system to communicate feelings the whole time. Somehow I think that being permitted to utilize these different kinds of dialogic exchanges, on- and offline, stimulated each and every one of us to propel our knowledge development further.

S3: We got great help from our supervisor, both on- and offline throughout all the project weeks. She was extremely quick with her responses, both to our countless questions and to our more or less uncompleted texts. I felt that to be so motivating. We learned very much from speaking with her, on the Net, but indeed also in her office. She was readily there for us all the time.

S4: The positive comments from the supervisor, on- and offline were great. We were continuously confirmed and encouraged all through the work. And by challenging our opinions, she in a way drew us after her and made us think more broadly. When we had been talking together in her office, we always left feeling content and in high spirits. We could say that she, in a way, met us in our common zone of proximal development. From there she lifted us up to higher levels of understanding. I explain this like they do within socio-cultural theory traditions: She found out where we stood professionally and scaffolded all four of us further on our "knowledge building way."

The nature of the task for the project group in phase three thus primarily consisted of harmonizing the different voices in relation to each other in a way that at all times contributed to useful and "harmonious" conversation and meaning development inside their own shared room of understanding.

(2) The media used in communication (online or face-to-face)

On this level the students used the aids they deemed to be most practical and semiotically mediating to attain the most beneficial project progress. They communicated regularly on the Net, and they conducted frequent telephone and face-to-face group meetings. Their academic conversations were strengthened because the various mediating tools that used supplemented each other in a way that intensified the project work process.

(3) The relationships that were established

The sense of group community was bolstered because each student was active in his or her "use of voice," including solo initiatives, dialogue duets, trios and quartets. Their relationship to their supervisor was also strengthened because she was gradually drawn into the community in a way that made it natural for her to sound her voice in the polyphonic group choir (compare Dysthe, 1995). The various voices contradicted each other, supplemented each other and were contrasted with each other. The voices accompanied each other, thus helping to build academic reflection chains (Hoel & Gudmundsdottir, 1999) and strengthening social network ties. These matters helped to make group members eventually perceive their group as a rich resource, both with respect to human and academic capital (compare Hoel, 2001). Thus the sense of belonging in the group was strongly cultivated.

Closing Interpretation

The communication in phase three led to dynamic use of all the triangles in the group's activity pyramid. The student group ensured that all the connecting lines between the various dimensions of the pyramid were practiced and gradually automated. The activity system was thus heavily reinforced. Communication had developed from activity, via action to operation, to a "well-practiced routine" (compare Wells, 1999). Toward the end of this phase, to continue my house metaphor, one could say that the students' house of learning was almost finished.

But there were still some incomplete sections, including plugging some walls and the roof, which necessitated some work on a higher level.

Phase Four: Developing Critical and Constructive Awareness

During this fourth phase there was no chance to opt out of the activities. The project report, which served as the students' examination paper, had to be finished. To succeed, the students needed to speed up the development of the reflection chain among them (compare Hoel and Gudmundsdottir, 1999). The nature of the task demanded academically developing, reflective, insightful, critical and constructive conversation on a level that would tolerate the close scrutiny of the examiner. At this stage targeted group cooperation, learning, and academic development were in focus, "using language as a bridge" (Hoel, 2001, p. 181).

On- and offline communication were used in turn and continuously during this period. The students exploited all the linguistic aids they had at their disposal for focused discussion in the group, and for the maximum use of supervisor support. The group used my skills in an active and aware way. Earlier I had frequently been the initiator in taking the discussions in the group further. I had taken the responsibility for the "initiative moves," and the students had then come up with various forms of "following moves" (Halliday & Martin, 1993). The exchange in the communication is now characterized by more significant student responsibility, a more substantial number of "initiative moves," and a much greater internalized, theoretical substance than during the previous phases. My task was thus more focused on following up the specific academic wishes and needs of the students.

Through conversation and dialogue the communication partakers now created a mutual interpretation zone for reciprocal academic development. The students and I played complementary roles inside this zone. Both parties learned from the interplay with each other (Wells, 1999, Hoel, 2001, p. 178).

During this period the group's activity system was virtually buzzing like a beehive with a high degree of activities in all the triangle dimensions. Student and supervisor voices could be heard incessantly and in a polyphony, and in full strength on the way to completing the report. At the completion of this phase the students' house of learning was finished. It stood sturdily on its foundation, with solid and durable walls and roof. "The house report," the project report, had been submitted. The house inhabitants were now ready to tell others both about their construction activities and their satisfaction with the completed building. They were on their way to phase five.

Phase Five: Dissemination of Understanding

After the report had been completed, the students were given clear requirements for disseminating what they had learned, a duty with which they readily complied. The college required that the report should be posted on the BSCW, and that a certain number of copies be printed for their own use, for the examiners and for the department's library. Moreover, the special education staff required the group to present the core of the report to their co-students. All of this was done in a proper manner.

The most important thing that happened now was that the groups, "the inhabitants" who "lived in" the different houses of learning, began to be interested in each other again. They spoke with each other about how they had constructed

their houses, how the foundations, roofs and walls had been raised. “Our” student group examined other groups’ houses, they invited others into their house, and they compared aspects of the interiors and exteriors. At this highest level the students were speaking with each other across project group membership about the dimensions and activities that had been emphasized in the various group activity systems. They raised their voices. They shared and discussed their own views with others, and they met members of the other groups in meaningful dialogues. Thus new and expanded common rooms of understanding were developed in the various houses of learning.

During this final phase the ties in the class network were strengthened through reflection chains (Hoel & Gudmundsdottir, 1999) that were created across the project groups. We can imagine railings running from the various newly built houses of learning connecting them to each other in a way that, to stretch my metaphor a little extra, created a small village of learning (compare Lemke, 2002). It is easy to envision that in the future this village will be in contact with other villages within an expanded special education landscape.

Concluding Remarks

As clearly demonstrated by the examination of the phases above, the data analysis documented that the students felt it necessary to cope with and handle challenges connected to *one* phase level before moving on to a higher stage. They needed to sense a degree of security and confidence in one phase before moving to the next, until reaching the highest “development stage.” The small project group with its supervisor was the most important learning context for the students we have focused on here. The classmates functioned more in the background, as supporting co-players.

Each phase comprised the nature of the task, the media used in communication (online or face-to-face), and the relationships that were established. The findings show that each of these aspects scaffolded and facilitated the learning process, the creation of community, and how each phase created the conditions for the subsequent phase. The analysis reveals how the online interactions gave rise to meaningful face-to-face conversations that, in turn, facilitated more reflective and sophisticated online interactions. The discussion following the oral presentations of the reports gave rise to meaningful and authentic dialogues between several of the participants. These online exchanges and face-to-face interactions assisted each other and enabled many students to claim their voice among the multitude of voices from sundry special education practices that were sounded through the project period. The end result was a community of learners whose individual voices pulsated through a collective process.

Considerations in Retrospect

The ICT medium is a quick medium, and in order to make the communication work optimally I found it extremely important to give immediate response. The requirement for speedy feedback appears to be general, not unlike the oral situation. However, writing takes time, so this being in a hurry created many quite stressful situations. I nevertheless felt that being able to give *speedy feedback right in the learning process* was rewarding, both for the group members and myself, as we were parts of the same learning community.

This study's selected group spent time on developing good cooperation procedures right from the start. Through various "situation definition categories" they built the "foundation for their house of learning." Once the essential human connection and trust had been established through personal interaction, constructive conversation continued through technological media.

Not all the groups were able to accomplish this common situation definition, which had negative consequences for their further "house building." I am convinced that this groundwork, which the sample group took seriously, is of the utmost importance, and that there is a price to pay later if this is done poorly.

It is also important to point out that the students were in a process with their learning, and that this was of vital importance when it came to the role I as a supervisor came to play. I functioned as a *process manager* (compare Gulbrandsen, 2001). My role became one of *leading and supporting the learning process* in the group's common zone of proximal development. My task was to keep the process going when the students came to a stop, either by offering academic initiatives, or by functioning with a leader's authority by setting demands and presenting expectations on performance.

What struck me as the most important single factor influencing the learning processes was that the ongoing interactions were *written down*, as dialogues, within a large, joint communication room.

Last but not least, I agree with the students when they claim with determined voices that ICT-based communication does not replace face-to-face communication, but rather is an enhancing dimension in the learning process. The close-up study of this sample shows the development of a learning community, where the balance between face-to-face and online collaboration, as well as the equilibrium flanked by offline teaching and guidance and Net-based work, seems to have been found. Moving between the online and offline communication means collectively propelled learning development within the student group forward in an exhaustive manner. Thus a close community grew where I felt that I was an equal partner. The social relationships that were generated around the fact that a product must be submitted apparently also positively influenced learning.

BSCW—The Road Ahead: From Theories of Learning To Theories of Teaching

Based on the experiences the students and I have had and conclusions I have reached from this "best case" scenario, I maintain that Internet groupware as a learning medium has a potential that should be exploited more, both by university college teachers and by researchers. This is not because such groupware on its own improves students' learning processes. The reason is rather that having the possibility to establish learning communities, which in addition to verbal speaking require writing online, influences students' conversations in a supportive learning-enhancing way.

The main rationale for using a Web system structure is found in the vast possibilities of the medium when it comes to putting things into writing on many levels along the way in the learning process. Another reason is the possibility of recording dialogue in a lasting medium so that the learning effect found in dialogues will not be quite as ephemeral as it is in regular conversations. Additionally, I emphasize the argument that online communication alone will not have such a

positive effect. It is the alternating between the off- and online tool opportunities that forces learning forward.

Finally, trying out diverse Internet groupware agendas, which bring into play a variety of on and offline communication tools, should be done systematically within teaching practices and educational research projects in the future. Such run-through is necessary to gain experiences and adjust the use of Web-based communication tools along the way. I would recommend other teachers and researchers use activity theory and socio-cultural theory as lenses to see through and understand what happens to the learning developmental processes of students when they take part in learning communities similar to those described here. Future research should focus both on successful stories, as I have done, but also on unsuccessful teaching and learning experiences. Both approaches are necessary in order to maintain rich and fruitful knowledge about the relationship between face-to face and online interactions in order to improve learning development.

If more people are willing to test and develop Net-based learning community schemes, and follow them up in subsequent analyses, this will eventually provide those who educate new teachers with many new opportunities when it comes to translating functional theories of learning into purposeful theories of teaching.

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