Supporting virtual learning groups. Part 2: an integrated approach

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Abstract

The learning industry and business educational establishments are being transformed by the use of the virtual learning environment. This enables learners to participate and collaborate from all corners of the earth at any time of the day. In addition, costs can be shared over multiple sites and learning materials can be more easily kept up to date. This paper discusses five different approaches to developing, supporting and participating in the learning environment. These are the pedagogical approach, the intellectual approach, the technical approach, the collaborative approach and the facilitative approach. From these approaches, an integrated model of virtual learning is developed. Finally a number of recommendations are presented.

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Introduction

Electronic scholarship is becoming an increasingly important aspect of both teaching and training (Alavi, 1994; Ives and Jarvenpaa, 1996; Knoll and Jarvenpaa, 1995; Webster and Hackley, 1997). Educational institutions are using virtual learning environments, via the Internet, to deliver their distance learning courses. Consequently, this type of virtual learning can be undertaken "any place, any time" by the learners (Hislop, 1997). However, this type of technology has encouraged theorists to speculate on the most effective methods for enhancing participant learning (Webster and Hackley, 1997; Lengnick-Hall and Sanders, 1997). Many theorists believe that in order to acquire new skills and knowledge, participants should be actively involved in the learning (Bonwell and Eison, 1991; Kolb, 1984). Thus, they should be solving real problems, collecting relevant data, undertaking group decision making, contacting subject experts and generating novel ideas. Virtual learning also involves collaboration, which can help the participants to exchange ideas, knowledge and experiences (Lou *et al.*, 1998; Alavi, 1994; Hill, 1982). Consequently, virtual learning can be quite different from the learning undertaken in a traditional classroom setting (Leidner and Jarvenpaa, 1993; Catchpole, 1993).

The first paper of this series discussed the different types of learning strategies and concluded that the virtual learning environment could encourage effective collaborative and experiential learning. In order to develop an effective virtual learning environment, however, a tutor must support the group participants, maintain a safe environment and encourage novel problem solving processes (McFadzean and McKenzie, 2001). In addition, further support by other specialists must be sought in order to develop and maintain the appropriate resources needed for the virtual learning environment. These specialists include topic authors, course tutors and technologists. The aim of this paper is to discuss the roles of these specialists and to develop a model of integration that can serve as a framework for aiding participants of virtual learning. In addition, a number of practical recommendations for instructors and participants are presented.

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Developing a model for virtual learning groups

There are a number of different issues that need to be considered in order to develop and support virtual learning groups. Janicki and Duncan (1998) suggest that these include the exploration of educational paradigms, the role of the student and the role of the educator. Berge (1995) suggests that the virtual learning environment can be enhanced by looking at the following roles: pedagogical, social, managerial, and technical. These are similar to those developed by Symons and Galpin (1997). They suggest that the four categories of critical factors are pedagogy, leadership, socialisation and technology.

From the pedagogical perspective, tutors must develop an environment that will enhance student learning. Consequently, the tutor must decide on whether he or she wishes to develop a teacher-centred or a participant-centred model of learning (Symons and Galpin, 1997). A participant-centred model of learning will require a change in perspective and attitude from both the instructors and the learners (Hislop, 1998; Hiltz, 1994; Hadidi and Sung, 1998). Thus, managerial, social and technological aspects become more important. For instance, in a participant-centred model, the tutor, alone, is no longer seen as the fountain of all knowledge. This role lies with every member of the group since each participant can draw on his or her own knowledge and experiences. Nonetheless, the tutor must still develop a curriculum and a learning structure for the students (Berge, 1996; Nunn, 1998). Moreover, he or she must support the intellectual activities of the learner.

The virtual learning environment also requires a second "leadership" role, that of facilitator or process supporter. The facilitator encourages the learners to participate and collaborate. In addition, he or she supports the process and helps the group to behave in a positive and effective manner. The participants, themselves, must learn to co-operate with one another and to develop active, lively and effective dialogues. Electronic collaboration and learning, however, can only take place if the learners are comfortable with the technology and if it is running effectively. Thus, there are technical considerations to be taken into account.

Virtual learning therefore can be developed and supported by considering the following critical factors: the pedagogical perspective, the intellectual perspective, the technical perspective, the collaborative perspective and the facilitative perspective. These are discussed in more detail below.

The pedagogical approach: learning in an electronic environment

The pedagogical approach to virtual learning is different from that of traditional classroom-based teaching (Catchpole, 1993; Harasim, 1989; Symons and Galpin, 1997; Hamalainen *et al.*, 1996). For example, working in a virtual environment can give the student significant control over his or her learning process (Ahmad and Piccoli, 1998). Consequently, he or she can learn at his or her own pace. In addition, one of the main advantages of working in a virtual learning environment is the collaboration that occurs between the participants. The group members can learn from one another because each one has diverse skills, abilities and experiences. This is not a natural process, however. Thus, some learners can find it very difficult to participate in a collaborative environment. In fact, many students still prefer to undertake courses that are primarily lecture-driven. Nevertheless, research has shown that learners will accept virtual courses if they see a tangible benefit from their use (Hadidi and Sung, 1998; Rich, 1997).

Experiential and problem-based exercises can help to enhance the student's learning (Lou *et al.*, 1998). In fact, Kolb's learning cycle is a useful framework for developing learning structures. Kolb suggested that learning could be enhanced by going through the following cycle: gaining concrete experience, observing and reflecting upon this experience, gaining understanding by forming abstract concepts and, finally, generalising and testing the implications of these concepts in new situations (Kolb *et al.*, 1971). For example, McMillen *et al.* (1994, p. 218) describe how they utilised Kolb's model to develop a learning process:

> [The] participants sought and took in information about themselves, their job and the organization (concrete experience), discussed and analysed the information with others (reflective observation), used the concepts presented in the workshop to develop theories to help understand their experience better (abstract conceptualisation) and experimented by applying the new information to their work situations to complete homework assignments (active experimentation), thus generating new data to bring back for discussion.

Consequently, instructors must devise and support sessions that encourage experiential learning and collaboration. This should also be undertaken in a well-structured manner otherwise the participants would complain that the course is too ill-structured and ambiguous.

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The intellectual approach: teaching the electronic learning group

According to Bagla and Konana (1998), the process of teaching involves a number of different processes. These include:

- *Administration* – for example, developing course materials, assessments, exams, meeting schedules, class rosters and assignment submission dates.
- *Monitoring* – for example, setting educational rules, monitoring exam performance and trends, listening to student concerns and giving feedback to the learners.
- *Dissemination* – for example, circulating the syllabus, the course materials, announcements, reminders and assignments.

In the virtual learning classroom, many of these tasks must be undertaken electronically. For instance, reminders can be sent out automatically if a particular student has failed to submit an assignment or piece of work by the due date. Moreover, the management of knowledge can be undertaken quite differently than traditional lecture-based learning. According to Cohen (1998, p. 1045):

> Each course would be designed specifically to meet the needs of a specific set of students with their unique sets of level and background. This course material will be more current and more focused than any that revolves around a text. Likewise, the material will be in greater depth than those based on research papers since the topic author can provide a large array of other resources, such as interviews.

Consequently, the tutor still has a major role to play in a collaborative learning environment. However, he or she must encourage the learners to become less dependent on the tutor for content information. In addition, the learners must be encouraged to develop, discuss and evaluate information gathered from their own experiences.

The technical approach: supporting the technological demands of the electronic learning group

The virtual classroom not only provides the learners with on-line course materials and electronic discussions, but it also provides facilities for submitting and marking assignments, booking workshops, e-mailing colleagues and ordering additional course material and working papers (Symons and Galpin, 1997). Consequently, participants must be able to utilise the system both efficiently and effectively in order to use it to its fullest potential. Symons (1995) found that only 15 per cent of the students he evaluated valued the virtual learning classroom. This was because there were technical barriers that had not been surmounted. For example, students complained of not being computer literate or not owning a computer powerful enough to run the appropriate software effectively. However, as these technical barriers are being reduced, many more participants are seeing the benefits of undertaking virtual learning. For example, Symons and Galpin (1997, p. 13) found that, on average, 76 per cent of the students they surveyed were "enthusiastic users of computers". In addition, Hislop (1997) also found that his students were satisfied with their experiences of the virtual classroom. For instance, 83 per cent found that this type of learning was very convenient, 93 per cent found collaborative learning beneficial because they could see the ideas and assignments of other students and 95 per cent of the students felt that they had better access to the instructor. In addition, 43 per cent felt that they actually communicated with the instructor more.

It is important, however, to recognise that each participant has different abilities. Consequently, he or she must be supported by technical experts. In addition, the contents of the course needs to be written in such a manner that it is easy to follow and that it encourages discussion and collaboration between the participants. The system, the learning process and the contents should be kept simple so that the learners can easily master it. Otherwise, many will become discouraged and disillusioned. However, the system should not be too simplistic because it may be considered awkward or inflexible by more advanced users. Thus, novice users should be given instruction manuals presenting a step-by-step guide to the use of the software. In addition, other more motivated participants can help group members to obtain a better technical understanding of the system.

The collaborative approach: developing the electronic learning group

The structure, development and configuration of a team can influence its productivity and results. According to Broome and Keever (1989), McFadzean (1998a) and Schwarz (1994), when groups are developed, requisite variety should be established and each participant should be

aware of his or her own roles and responsibilities. Teams, therefore, must be developed in a systematic manner. For example, some theorists have emphasised the need for a diversity of skills and/or role mix (Belbin, 1981; Margerison and McCann, 1990; Davidson, 1994; Katzenbach and Smith, 1993). One method of developing teams is by utilising a commercial instrument such as the 16PF (Dulewicz, 1995). Whichever way the team is developed, however, the participants must see a tangible benefit when undertaking virtual collaboration. One tangible benefit of utilising a virtual classroom is the development of heterogeneous groups. In particular, virtual groups can consist of multinational participants who can offer rich and diverse information and knowledge (Rich, 1997).

Moreover, teams must learn to work together. They must be given explicit roles and responsibilities by the facilitator. This may include instructions on specific issues such as conflict, participation, relevance of information and evaluation (Schwarz, 1994). Exercises given at the beginning of the course can help to enhance group effectiveness. For example, Case (1997) used a survival exercise such as Winter Survival, Lost at Sea, or Lost on the Moon to increase group cohesiveness and to illustrate the strengths and weaknesses that were present in the group. This preliminary group work helped the team to communicate and collaborate more effectively during the course itself.

The facilitative approach: supporting the electronic learning group

According to Epstein and Madey (1997):

> Collaborative learning opportunities can provide a deep learning experience. During collaborative learning, a problem is posed related to the instructional topic and teams are assigned to create solutions to the problem. A facilitator is selected to guide the group through the problem solving process. This can be a very short time span (several minutes) or longer depending on the topic and the complexity and importance of the problem. Each group could interact in real time ... and asynchronously ... if ongoing collaboration is necessary. [Participants] can practice their teamwork skills as well as deepen their understanding of the valuable knowledge that was presented to them.

The role of the facilitator is to help a group improve its processes (Schwarz, 1994). He or she can achieve this by utilising techniques that will encourage participation, dialogue and collaboration (McFadzean and Nelson, 1998). In addition, the facilitator intervenes during the group process in order to help the participants improve their behaviour and procedures (Rees, 1998; Hunter *et al.*, 1995; Schwarz, 1994; McFadzean and Nelson, 1998).

During a virtual learning session, fafilitators must encourage learners to participate in the collaborative sessions by asking open questions, summarising threads of conversation and asking certain participants to produce information on relevant topics. In addition, the facilitator must help the learners to maintain a safe environment. He or she should ensure that flaming or personal attacks are stopped immediately. This can be achieved by sending individual e-mails to the offending student.

A facilitator should also remain visible to the participants. According to Hislop (1998), there are certain times when the facilitator's presence has a higher impact. These include the start of the course, the end of the course and during transition periods. Hislop (1998, p. 1055) notes his experiences:

- *The first week* – since there is no scheduled first class meeting, the instructor needs to be active during the first week to help get the class started. Students taking their first online class tend to be both eager and anxious about getting started. Their natural impulse seems to be to wait for the instructor to do something before they start. Students who have taken several classes seem to become somewhat blasé. They fall out of the habit of regular participation during term breaks, and may need some push to get started again. In short, the instructor's early participation needs to signal the start of the [course].
- *Last week* – since there is no scheduled last class meeting, there is a danger that online classes will simply sputter to a halt rather than having a clearly defined ending. The instructor's participation in the last week is key to creating a good sense of closure for the course.
- *Transition points* – the considerations for starting and ending the class in the first and last week of the term also apply in smaller scale to the transition points within the course. A routine part of the instructor's participation should be to help move the class smoothly into and out of each phase of class activity.
- *After tests and assignments* – all students like prompt feedback on their work. If anything, being online seems to make students value prompt feedback even more.

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Developing a structure for collaborative learning

According to Cohen (1998, p. 1044), a virtual instructor must perform four separate tasks. He or she must:

(1) acquire knowledge of an ever-growing field;
(2) format and frame this knowledge into teaching modules so as to make it accessible to students;
(3) develop courses that intertwine these teaching models.;
(4) deliver and administer these materials to students.

However, in reality, separate individuals may undertake these four tasks. Consequently, including the team participant, there can be up to five different personifications involved in the collaborative virtual learning process. These are:

(1) *The topic author* – he or she develops the appropriate course material for the virtual learning environment. The topic author is a subject expert and is able to provide rich, fertile and timely knowledge about a given topic. However, the topic author must be primarily cognisant of pedagogical issues so that he or she can structure the materials appropriately and can develop an experiential learning process.
(2) *The course tutor* – he or she conducts the course delivery, presents the learners with feedback, answers topic-related questions and guides the participants to course sources. Thus, the course tutor, in the first instance, must use the intellectual approach. He must have extensive knowledge of the topic being discussed and is able to give appropriate and timely feedback. In some universities, especially those in the USA, teaching assistants provide this role.
(3) *The technologist* – he or she is a specialist in technical and pedagogical issues. His or her role includes preparing the materials for use on the relevant collaborative software package. The materials are structured in an appropriate manner to encourage dialogue, idea development, collaboration and learning. In addition, the technologist helps the participants to learn about the software and how it is best utilised. He or she should produce written documentation on how to use the system. Moreover, he or she will be available if the participants have any technical problems.
(4) *The collaborators* – these are the participants who are taking part in the course. They must learn to take the collaborative approach. In addition, they should also be aware of the pedagogical issues. It is important that the participants understand the value of learning in a collaborative and experiential manner.
(5) *The facilitator* – his or her role is to support the collaborators and the course tutor during the learning process. This is a specialist area and is similar to chairing a traditional meeting. The facilitator encourages the group to exhibit positive and effective behaviour. In addition, he or she encourages each member to participate and helps to maintain an environment of safety and comfort.

Each of these specialists will view their processes from their own perspective. However, it is also useful that each specialist is aware of the other viewpoints whilst undertaking his or her own work. For example, the topic author must be aware of the following when he or she is developing the course material and structure:

- *Pedagogical issues* – for example, when developing course materials, the topic author must construct the course is such a way as to encourage experiential learning.
- *Intellectual issues* – for example, the topic author must utilise the appropriate on-line course materials and build in processes for on-line monitoring and feedback.
- *Technical issues* – for example, when developing the course material, the topic author must ensure that the participants are given the opportunity to learn technical skills in an appropriate manner. In other words, they should not be expected to use complex technical skills at the beginning of the course.
- *Collaborative issues* – for example, the topic author should ensure that the course material and structure would encourage collaboration, discussion and team problem solving.
- *Facilitative issues* – for example, the topic author must ensure that the course materials are structured in such a way as to help both the facilitator and the participants enhance the collaboration process. There should be an opportunity,

for instance, to discuss the course objectives, to undertake a team building exercise, to develop trust between participants and so on.

According to McFadzean (1998a), the facilitator, as well as the other specialists, must also be attentive to the appropriate processes that influence the effectiveness and productivity of teams. These processes include the following steps and are summarised in Figure 1:

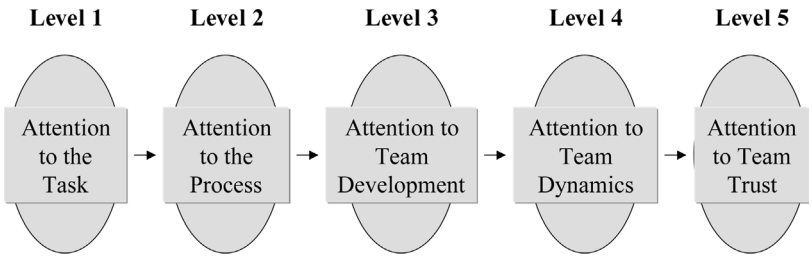
(1) *Attention to the task* – each participant must be aware of the task; he or she must develop clear, specific and measurable goals. In addition, an effective team will develop goal congruence so that each member is pulling in the same direction at the same time (Briggs and Nunamaker, 1996).

(2) *Attention to the process* – an awareness of the process is particularly important. The relevant learning materials need to be produced. These need to be structured in an appropriate sequence. In addition, applicable learning tools and problem solving techniques should be inserted into the structure in order to encourage the participants to undertake experiential and collaborative learning. Other structural issues such as deadlines and assignments should also be developed. Moreover, it is important to discuss the process with all the participants in order to gain process congruence. If process congruence is not reached, there may be some members who are unwilling to participate in certain aspects of the learning process (McFadzean *et al.*, 1999).

(3) *Attention to team development* – this is an important issue especially in the virtual learning context. Group members must be encouraged to use the system. This will only occur if they see the value of utilising it. Therefore, group members should not be situated in offices next to one another. Otherwise they will tend to discuss their work in a face-to-face fashion thus alienating other members of the team. In addition, each team should be well-balanced, incorporating people who have different roles and responsibilities (Belbin, 1981). It is also vital that these roles and responsibilities are made explicit at the beginning of the session so that everybody knows who everybody else is and what their roles and responsibilities are.

(4) *Attention to team dynamics* – it is important that team members behave in a positive and effective manner. In order to achieve this the facilitator must agree with the participants a number of ground rules that may include issues such as participation, flaming, conflict, criticism and so on (Bee and Bee, 1998; Hicks, 1991). Moreover, the facilitator must intervene if the group's behaviour begins to have an adverse affect on the fulfilment of the team's goals (Schwarz, 1994). The facilitator must also encourage participation, communication and dialogue. He or she can achieve this by asking open-ended questions, summarising conversations or inviting participants to present information on a particular topic (Nunn, 1998). In addition, the facilitator can also encourage participation by utilising a number of different creative problem solving techniques. These help the group members to view the issues from different perspectives and encourage them to develop novel and innovative ideas (McFadzean, 1998b; 1998c; VanGundy, 1988; De Bono, 1992).

Figure 1 A process for developing collaborative learning teams



Source: Adapted from McFadzean (1998a)

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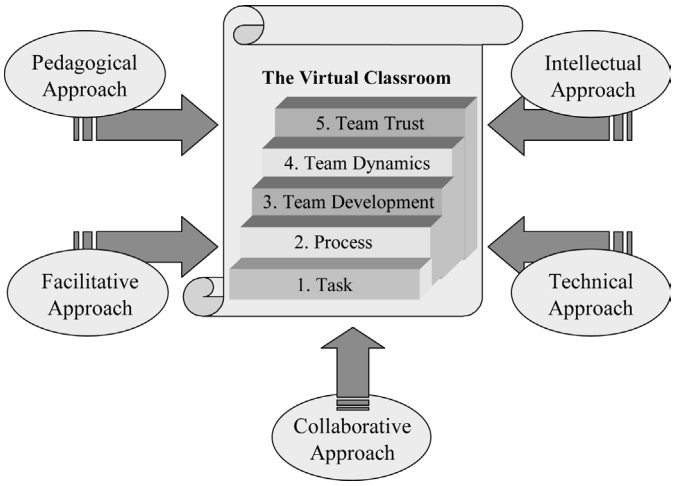
(5) *Attention to team trust* – trust is an important element for team success (Francis and Young, 1992; Katzenbach and Smith, 1993). Group members must be able to trust one another, as well as the tutor and the facilitator (McFadzean, 1998a). They will then be willing to undertake more unusual techniques or learning processes. In addition, the team participants must be aware of other members' feelings and emotions. Thus, they are less likely to be aggressive or negative. In addition, teams should remain enthusiastic and energised and they should find the work stimulating, motivating and fun (Hemsath and Yerkes, 1997; Francis and Young, 1992; Von Oech, 1983).

Consequently, in order to develop, support and participate in an effective learning process each type of specialist – the topic author, the course tutor, the technologist, the collaborator and the facilitator – must be aware of the above steps. In addition, each specialist must be encouraged to view these steps from the five different approaches. Thus, an integrated model of virtual learning is produced (see Figure 2).

Recommendations

From the above, a number of recommendations can be presented that may be useful in developing and supporting electronic learning groups (Berge, 1996; Rees, 1998; McFadzean, 1998a; Schwarz, 1994; Nunn, 1998). Tables I-V have been divided into the five different approaches and have been categorised using the process levels shown in Figure 1. These recommendations are described in more detail in the Appendix.

Figure 2 An integrated model for virtual learning



Further research

There are a number of challenges that require further research in the area of virtual group learning. These include the need to understand:

(1) *The roles of the instructors and students in a virtual learning environment* – Jonassen *et al.* (1995, p. 7) suggest that, "too often, potentially interactive technologies are used to present one-way lectures to students in remote locations. However, we believe that the most valuable activity in a classroom of any kind is the opportunity for students to work and interact together and to build and become part of a community of scholars and practitioners." Consequently, the roles of the instructors and the students must change. The instructor must provide a vision for direction, set a deadline for this vision to be fulfilled and support the process of undertaking the vision (Hislop, 1998; Janicki and Duncan, 1998). In addition, students are as equally responsible for the quality and amount of learning as the instructor (Leidner and Jarvenpaa, 1995). However, the demands of these tasks may prove too much for the students. According to Leidner and Jarvenpaa (1995, p. 287), "This is a fundamentally different way for students to think about a course; traditionally students are accustomed to thinking in terms of what they get out of a course rather than what they contribute to the knowledge created in a course." Thus, further research must be carried out on the role of the instructors and the students and how these can be enhanced.

(2) *The influence of structure on the learning process* – Nonaka (1994) suggests that the virtual classroom promotes creative chaos. This is because information is created by the students throughout the entire virtual learning process. Consequently, it is not known exactly what knowledge or information will be acquired and created (Leidner and Jarvenpaa, 1995). This occurs because the traditional learning structure has been

Table I The pedagogical approach

Level 1: Attention to the task	Have clear objectives
Level 2: Attention to process	Maintain flexibility Do not rely on offline materials Design clear and well-structured assignments that are easy to follow Ensure that the material is relevant and up to date Invite visiting experts
Level 3: Attention to team development	Choose the participants for each on-line group carefully
Level 4: Attention to team dynamics	Use learning exercises to encourage participation Maintain a non-authoritarian style Ensure objectivity at all times Do not expect large amounts of information from the learners Promote private conversations as well as those in the virtual classroom Find unifying threads Explicitly state required contributions Present conflicting opinions Submit suitable and valuable comments Request responses
Level 5: Attention to team trust	Do not ask questions that are likely to make the participants feel uncomfortable or emotionally insecure

Table II The intellectual approach

Level 1: Attention to the task	Present explicit and clear objectives and expectations to the learners
Level 2: Attention to process	Provide administrative information Allow enough time to prepare and plan the conference, the course materials and the group compositions Provide methods for co-ordinating and synchronising the learners
Level 3: Attention to team development	Distribute a list of participants Encourage participant facilitation Ensure that instructors and facilitators have had appropriate training for teaching and supporting on-line learners
Level 4: Attention to team dynamics	Encourage informal communication Respond quickly to each contribution Wait patiently for acknowledgements or responses Ensure that the contributions made by the tutor or facilitator are adequate If necessary, change the procedures that stifle positive creative behaviour Use private email to encourage conference members to participate in the discussion Do not overload the learners with too much information Ensure that the learners remain with the appropriate topic Change misplaced subject headings Ensure that one or two participants do not dominate the discussion Bring the discussion threads and the conference to a close decisively, when appropriate
Level 5: Attention to team trust	Request comments and feedback on the discussion threads and the conference as a whole

Table III The technical approach

Level 1: Attention to the task	Give direction regarding the technical side of the course
Level 2: Attention to process	Develop a study guide that presents technical information Provide technical information for the submission of assignments and other material
Level 3: Attention to team development	Ensure that technical support is readily available
Level 4: Attention to team dynamics	Provide rapid feedback for all technical problems Encourage peer learning Provide time to learn Avoid lecturing
Level 5: Attention to team trust	Support the participant's emotional needs especially if they are becoming frustrated due to lack of technical progress

Table IV The collaborative approach

Level 1: Attention to the task	Group members must establish appropriate aims and objectives Participants need to develop goal congruence
Level 2: Attention to process	Members must develop and follow a meeting agenda, timetable and plan Participants need to develop process congruence Group members must agree to be flexible Group members must be aware that they can learn from all the participants and not just the instructor as with traditional teaching Develop a culture for effective team learning
Level 3: Attention to team development	Ensure that each team member is aware of his or her roles and responsibilities within the group Develop a well-balanced group and ensure that there is requisite variety
Level 4: Attention to team dynamics	Ensure that each participant has been given the appropriate training to undertake virtual group work Reflect on the group's behaviour and how it has impacted on the team's aims and objectives Ensure that each member of the group can communicate effectively Encourage deliberation, reflection and understanding by utilising appropriate problem solving and learning techniques Ensure appropriate access to information Reduce distractions or unstructured and ill-focused discussions Encourage fellow members to participate in all aspects of the learning environment
Level 5: Attention to team trust	Encourage intrinsic motivation Revitalise the group's energy by presenting interesting comments, undertaking creativity exercises and ensuring a climate of fun and safety

Table V The facilitative approach

Level 1: Attention to the task	Develop clear objectives, which are both behaviour and subject specific Ensure goal congruence
Level 2: Attention to process	Ensure that an appropriate structure and relevant instructions have been put in place so that the participants know exactly what they are doing Ensure that process congruence has been established especially if some unusual techniques are to be utilised
Level 3: Attention to peam development	Present explicit instructions on the roles and responsibilities of each group member Ensure that appropriate participants are in each group Introduce all the participants, including the facilitator and tutors to one another
Level 4: Attention to team dynamics	Accept the fact that some people may never contribute to the conference Be aware of cultural or ethnic differences between the participants Encourage participation and interaction Compliment participants on their positive and effective behaviour Do not ignore bad behaviour from the participants Encourage positive computer etiquette Develop and present explicit ground rules for effective and positive behaviour
Level 5: Attention to team trust	Guard against fear and derision during the discussions Be aware of potential emotional problems and ensure that each participant is supported and defended Encourage commitment to the process by inviting open and honest debate

removed. Thus, students will have different learning objectives and experiences. Leidner and Jarvenpaa (1995) suggest therefore that assessment strategies must be both flexible and tailored to the individual.

Consequently, further research needs to be undertaken on the learning process, the acquirement of knowledge by the students and the different assessment procedures.

(3) *The barriers to faculty participation in the virtual learning environment* – According to Olcott and Wright (1995, p. 6), "One important issue affecting faculty participation has little to do with technology. Rather, it is the perception among faculty that the team approach to designing distance instruction may undermine the faculty member's autonomy and control of the curriculum." Consequently, faculty need

to be encouraged to work in a team to develop and support virtual learning courses. In addition, the role of the faculty member must change to that of a facilitator of adult students, who is able to work with a design team, and can adapt instructional aims and objectives to the appropriate technology (Hislop, 1998; Leidner and Jarvenpaa, 1995; Olcott and Wright, 1995). Dillon and Walsh (1992, p. 17) summarise this point:

> As the needs of students change so do the roles of faculty. The issue of ownership is crucial in the development of distance education, for we should never allow technology to "drive" the content. Likewise, the academy has a responsibility to shift from a faculty-centred to a student-centred educational system. The studies of effective distance teaching find that faculty who make the shift are not only more successful distance teachers, but also more successful classroom teachers.

Thus, further research needs to be undertaken on the barriers to effective faculty participation so that in the future an appropriate structure is devised to enable faculty to effectively develop and support virtual learning groups.

Summary

This paper has developed a model for virtual learning. The framework describes five different approaches to developing, supporting and participating in a virtual learning environment. These are the pedagogical approach, the intellectual approach, the technical approach, the collaborative approach and the facilitative approach. It is important that all five of these approaches are integrated in order to ensure a valuable, practical and beneficial learning experience for the participants. From this model a number of recommendations for each approach have been presented.

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Appendix. Planning a virtual learning session

The pedagogical approach: learning in an electronic environment

Recommendations

Level 1: Attention to the task

- Have clear objectives – participants must believe that their online communication and collaboration is time well spent.

Level 2: Attention to the process

- Maintain flexibility – every learner has individual experiences and abilities. Consequently, online courses need to remain flexible and the instructor must be prepared to support this. Thus, although a seminar agenda should be presented at the outset, the facilitator should also be prepared to follow the flow of the conversation, as well as guide the participants towards fulfilling their aims and objectives.
- Do not rely on offline materials – reading materials should be inserted into a database, which can accessed online. Consequently, the participant's discussions and opinions can remain self-contained within the online forum and can accessed by all the appropriate people.
- Design clear and well-structured assignments that are easy to follow – this medium lends itself to group assignments or group collaboration for individual assignments. However, when designing assignments, the instructor must not over-complicate the design and must develop clear and understandable questions.
- Ensure that the material is relevant and up to date – develop questions, exercises and activities for the participants that will relate to the learners' experiences, abilities and roles.
- Invite visiting experts – guest experts can join the conference to add extra knowledge and experience. In addition, the participants can ask the expert pertinent questions or he or she could respond to the contributions made by the learners.

Level 3: Attention to team development

- Choose the participants for each online group carefully. Each group must be well balanced and receive value from working on-line.

Level 4: Attention to team dynamics

- Use learning exercises to encourage participation – invite collaboration by utilising group interaction techniques such as debates, small group discussions, polling activities, one-to-one message exchanges, creative problem solving techniques and dyadic learning partnership exchanges.
- Maintain a non-authoritarian style – this should be unnecessary if appropriate aims and objectives have been explicitly communicated to the group. It is usually better to encourage the participants rather than appearing as an "authority figure".
- Ensure objectivity at all times – before posting any information or comments to the conference, or before answering any questions, consider the following:
  – the tone and content of the message;
  – the recipient's skills, knowledge and attitudes; which you may have picked up from previous postings; and
  – the time of the posting in relation to the conference thread.
- Do not expect large amounts of information from the learners – most conversations will contain three or four major points. Thus, online instructors should not expect too much from the participants.
- Promote private conversations as well as those in the virtual classroom – encourage private conversations between individuals who are interested in similar topics. These can always be summarised and fed back to the rest of the group.
- Find unifying threads – instructors can summarise conversations in order to encourage participants to pursue the subject area further.
- Explicitly state required contributions – the instructor should explicitly state what is required of the learners. This may include presenting a figure for the minimum number of times that students are required to contribute to the collaborative process.
- Present conflicting opinions – the facilitator can indicate any opposing perspectives, conflicting opinions or opposing perspectives to the learners. He or she can then encourage discussion, debate or an evaluation of these controversies.
- Submit suitable and valuable comments – it is best to utilise open-ended remarks and practical examples when commenting on threads of conversation

or when presenting information. In addition, these should also be kept relatively short otherwise the information becomes difficult to comment on.
- Request responses – one method of encouraging communication and debate between learners is to request comments from particular participants on certain topics by a given date.

Level 5: Attention to team trust
- Do not ask questions that are likely to make the participants feel uncomfortable or emotionally insecure.

The intellectual approach: teaching the electronic learning group

Recommendations

Level 1: Attention to the task
- Present explicit and clear objectives and expectations to the learners – the facilitator needs to give clear and succinct statements regarding the conference topic, learning objectives and the expectations for students within the conference. These should be referred to throughout the conference proceedings.

Level 2: Attention to the process
- Provide administrative information – co-ordinate and supply information about activities such as registration, counselling, and library activities.
- Allow enough time to prepare and plan the conference, the course materials and the group compositions – both facilitators and instructors may find that the development and distribution of course materials may take substantially longer than first anticipated.
- Provide methods for co-ordinating and synchronising the learners – if possible, ensure that the participants commence the conference in unison. In addition, encourage the participants to work together in an organised and simultaneous fashion. It may be necessary to "re-start" the learners in order to resynchronise them.

Level 3: Attention to team development
- Distribute a list of participants – share the list of participants to all the learners. This list should include e-mail addresses so that all the conference members can communicate privately to others, if necessary.
- Encourage participant facilitation – a proportion of the course can be designed to allow the learners to take on the role as "assistant facilitator". During this activity, the pertinent learner can lead the discussion and summarise the results. According to Berge (1996), "This needs to be determined by the content of the class, and the skill, knowledge and attitude of the students. But again, one instructor does not necessarily need to solely execute all these roles and tasks."
- Ensure that instructors and facilitators have had appropriate training for teaching and supporting online learners.

Level 4: Attention to team dynamics
- Encourage informal communication – both the tutor and the facilitator should stress the need for informality in the conference. For example, perfect grammar is much less important than making the meaning of the comments clear. These can be edited at a later date if they are to be inserted into a group report or assignment.
- Respond quickly to each contribution – there are several way of achieving this. The tutor or facilitator could post a personal e-mail message to the contributor thanking him or her for the posting, or he or she could respond via the conference by making an observation or remark that refers to the author's comments. However, in some conferences it is best to respond to several contributions by weaving them together in one comment. This will depend on the content of the discussion as well as the number of learners taking part. It is advisable to test and evaluate different methods in order to ascertain which is most effective.
- Wait patiently for acknowledgements or responses – learners may not acknowledge contributions for days or even weeks. Consequently, the tutor and the facilitator must be patient. He or she must be prepared to wait several days for responses. In addition, he or she should not rush in to fill every silence with comments or contributions.
- Ensure that the contributions made by the tutor or facilitator are adequate – normally, as a rule, tutors or facilitators should contribute between one-quarter to one-half of the online material. This will depend on the amount of information contributed by the learners. If the participants present a large amount of information, the tutor should reduce the amount that he or she contributes.
- If necessary, change the procedures that stifle positive creative behaviour – the tutor must encourage stimulating,

creative discussions. Procedures that stifle this behaviour should be changed. In addition, the discussions should be centred on the topic. Consequently, if the learners start discussing procedural issues, then the tutor must step in by informing the participants about the procedures and encouraging them to return to the topic.

- Use private e-mail to encourage conference members to participate in the discussion – the facilitator can encourage communication, solicit suggestions and initiate debates by using private e-mail messages to the appropriate people.
- Do not overload the learners with too much information – the instructor should pace the conference so that all the conference members are able to keep up with the discussion. This is usually equivalent to about one long post per day. If the participants have a lot to contribute, the moderator should contribute less to ensure that the participants are not overloaded with information.
- Ensure that the learners remain with the appropriate topic – sometimes the learners can digress from the subject area. The facilitator should therefore guide the participants back to the original topic.
- Change misplaced subject headings – make sure that the subject line is appropriate for the discussion. If the message has been posted to the wrong discussion, this should be changed immediately so that the learners can follow each thread with ease.
- Ensure that one or two participants do not dominate the discussion – in some groups, one or two people can be very outspoken to the detriment of the rest of the team. If this occurs, the tutor should send a private e-mail to the people concerned asking them to wait a few responses before contributing. Similarly, the less outspoken individuals should be asked to participate more actively.
- Bring the discussion threads and the conference to a close decisively, when appropriate – ensure that each thread has been closed so that they do not drag on after they have served their purpose.

Level 5: Attention to team trust

- Request comments and feedback on the discussion threads and the conference as a whole – invite participants to communicate how they feel about certain subject areas and how these would fit into their workplace. In addition, request feedback on the course so that it can be enhanced for future groups.

The technical approach: supporting the technological demands of the electronic learning group

Recommendations

Level 1: Attention to the task

- Give direction regarding the technical side of the course – it is important to give the participants a step-by-step introduction into the aims and objectives of the technical side of the course. However, it is also important not to make this too inflexible. Learners will often rebel if the structural design of the conference is excessive.

Level 2: Attention to the process

- Develop a study guide that presents technical information – a common study guide or workbook that addresses both the content and any common technical concerns can be valuable to the learners. The workbook could include introductory information, a description of the course activities, resource materials, and other information about the course components or procedures. In addition, the workbook could also serve as a basis for discussion at the beginning of the course.
- Provide technical information for the submission of assignments and other material – the learners need to be provided with information on how they can submit material to tutors or administrators. In addition, information should also be presented on how the assignments are marked and whether the feedback will be distributed online or via a hard copy.

Level 3: Attention to team development

- Ensure that technical support is readily available – novice computer users should be given some training on how to use the system. In addition, technical support people should be available to answer inquiries by telephone or e-mail. The tutor and facilitator should also know who would be available to offer technical support, if necessary.

Level 4: Attention to team dynamics

- Provide rapid feedback for all technical problems.
- Encourage peer learning – novice e-mail or e-conference users would benefit if they were able to work with more experienced peers. Consequently, novice

workers could be partnered with a more experienced participant.
- Provide time to learn – learners need support as they learn about new software features and develop their computer skills. Provide adequate time for novice users to be comfortable with the technology before they need to participate in the conference.
- Avoid lecturing – long postings can be tedious and difficult to read. In addition, it can impede discussion. Consequently, single contributions should be limited to no more than two screens. If a longer posting is necessary, the information should be sent out separately as a reading. This can be undertaken either electronically or by mail.

Level 5: Attention to team trust
- Support the participants' emotional needs especially if they are becoming frustrated due to lack of technical progress.

The collaborative approach: developing the electronic learning group

Recommendations

Level 1: Attention to the task
- Group members must establish appropriate aims and objectives.
- Participants need to develop goal congruence – this is necessary so that all the group members move in the same direction at the same time.

Level 2: Attention to the process
- Members must develop and follow a meeting agenda, timetable and plan – a meeting framework must be developed so that the process can be undertaken in a structured and constructive fashion.
- Participants need to develop process congruence – this is necessary because all the group members must agree to participate and to share in all the planned activities.
- Group members must agree to be flexible – even though an agenda or meeting plan has been developed it may be necessary to change the routine in order to discuss unforeseen issues.
- Group members must be aware that they can learn from all the participants and not just the instructor as with traditional teaching.
- Develop a culture for effective team learning – in order to create effective virtual teams, the participants must have both an appropriate learning environment and sufficient time to undertake the course effectively. Consequently, the learners must have the appropriate hardware and software and should put time aside each day to participate in the discussions.

Level 3: Attention to team development
- Ensure that each team member is aware of his or her roles and responsibilities within the group.
- Develop a well-balanced group and ensure that there is requisite variety.

Level 4: Attention to team dynamics
- Ensure that each participant has been given the appropriate training to undertake virtual group work.
- Reflect on the group's behaviour and how it has impacted on the team's aims and objectives.
- Ensure that each member of the group can communicate effectively – there should be no negative criticism or personal attacks.
- Encourage deliberation, reflection and understanding by utilising appropriate problem solving and learning techniques.
- Ensure appropriate access to information – all information should be available on-line to encourage discussion and reflection. In addition, further reading or other appropriate sources of information should also be made available online. This can be achieved by using hyperlinks to other sites or by listing bibliographies or other data.
- Reduce distractions or unstructured and ill-focused discussions.
- Encourage fellow members to participate in all aspects of the learning environment.

Level 5: Attention to team trust
- Encourage intrinsic motivation – the participants must be interested in undertaking virtual discussions and are willing to take the time and effort to develop both themselves and the other participants in order to improve the dynamics and success of the team.
- Revitalise the group's energy by presenting interesting comments, undertaking creativity exercises and ensuring a climate of fun and safety.

The facilitative approach: supporting the electronic learning group

Recommendations

Level 1: Attention to the task
- Develop clear objectives, which are both behaviour and subject specific – participants must know how they are

expected to behave online as well as what is expected of them in terms of learning.
- Ensure goal congruence – the participants need to be pulling in the same direction at the same time.

Level 2: Attention to the process
- Ensure that an appropriate structure and relevant instructions have been put in place so that the participants know exactly what they are doing.
- Ensure that process congruence has been established especially if some unusual techniques are to be utilised.

Level 3: Attention to team development
- Present explicit instructions on the roles and responsibilities of each group member.
- Ensure that appropriate participants are in each group – remember, there must be some value for using this system. If all the participants meet for coffee anyway, they are unlike to utilise the electronic learning space.
- Introduce all the participants, including the facilitator and tutors to one another – the facilitator should encourage the participants to introduce themselves so that all the group members can get to know one another. In addition, it can help to build the sense of community.

Level 4: Attention to team dynamics
- Accept the fact that some people may never contribute to the conference – there are some people, known as "lurkers" who never participate or contribute to the conversations. These people may find it easier to learn by listening rather than contributing. However, if possible all members of the online community should be encouraged to contribute. This may involve reducing the size of the groups so that all the participants feel comfortable partaking in the conversation.
- Be aware of cultural or ethnic differences between the participants – the virtual learning environment can be beneficial because the groups tend to be heterogeneous. Thus, the participants have differing experiences and abilities as well as differences in culture. Consequently, the facilitator must be aware of these differences and should be cautious when interpreting intent or tone from on-screen text. In addition, he or she must also be aware that his or her own communications can be construed differently than intended especially when using humour or sarcasm.
- Encourage participation and interaction – collaboration and participation can be encouraged by using special introductory techniques, dyadic partnering and group assignments.
- Compliment participants on their positive and effective behaviour – reinforce and encourage effective group behaviour by complimenting the relevant participants. In addition, saying "thank you" to participants who respond effectively online can help to encourage courtesy and interaction.
- Do not ignore bad behaviour from the participants – the facilitator needs to challenge participants who are behaving in a negative or inefficient manner. If necessary, the facilitator needs to refer to the ground rules and request that the group members continue to follow them.
- Encourage positive computer etiquette – flaming, the use of vulgar language or personal conflict should be discouraged. If this does occur, the facilitator must remind the participants of the correct computer etiquette.
- Develop and present explicit ground rules for effective and positive behaviour.

Level 5: Attention to team trust
- Guard against fear and derision during the discussions – fear of ridicule can diminish creativity and reduce participation. Each comment should be accepted and discussed in a positive manner. Comments that are sarcastic or derisive should be discouraged.
- Be aware of potential emotional problems and ensure that each participant is supported and defended.
- Encourage commitment to the process by inviting open and honest debate.