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Online Instructional Consultation (OICon) Model for Higher Education Institution (HEIs)

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Abstract

Virtual discussion between students and lecturers nowadays become easier and effective by using computer-mediated communication (CMC) tools. The issue on geographical distance is no longer a problem but there are some aspects that need attention, such as the consultation documentation, record log and the ability to see the records of these virtual relationships. Most current virtual communications software is focused on the communication and less on the process of before and after the virtual communication. In order to enhance the virtual communication process, we have designed and developed an Online Instructional Consultation (OICon) model to facilitate student-lecturer consultation for higher education mentor-mentee system in Malaysia. The model consists of 5 interrelated domains that are personalization, consultation processes and task involved, features and multimedia components, consultation content and consultation document. It provides alternative means on delivery of the contents and services as well as provides participants a range of option. By this way, students and lecturer can involve actively through online consultation at remote places, not just between lecturer and students but also on post-session discussion among peers. Point of correspondence includes implementation of CMC tools to facilitate online consultation processes for academic advisory purpose. OICon model was then transformed into a prototype system to verify the model. Based on the evaluation conducted, we found that users are relatively positive towards implementation of multimedia communication tools for consultation in higher education and they agreed that the OICon model is crucial for enhance and promote interactivity for consultation among students and lecturers.

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Keyword: Online instructional consultation; nonverbal cues; computer-mediated communication; higher education institution

1. Introduction

Telementoring is conceptualized as the online or electronic version of mentoring (Chan, 2000; Single & Muller, 1999). The evolution of communication technologies at present give impetus to researchers and practitioners by simply putting the Computer Mediated Communication (CMC) tools on their telementoring application without really understand the potential benefits of the technologies in the telementoring program. Although telementoring provides connectivity, the effect of distance and time depersonalizes the relationship is still questionable (Talmadge, 2004). Eventually, the problem of socialization become more severe as both mentors and mentees are separated at a distance. Three issues and challenges of the existing telementoring program that had been identified are:

Miscommunication due to the lack of nonverbal cues (McLoughlin, Brady, Lee, & Russell, 2007; Ensher, Heun, & Blanchard, 2003). Most telementoring program adopted asynchronous CMC tools such as e-mail and web forum to support online mentoring program. This lead to the lack of nonverbal cues that may reduce the richness of information delivered. In addition, it may cause misunderstanding or incorrect diagnosis of the client's problem that end up with consultation frustration.

The need of competency in written communication and technical skills (McLoughlin, Brady, Lee, & Russell, 2007; Ensher, Heun, & Blanchard, 2003). Human are not alike. Those who are slow in typing thorough in editing may find that their contents may no longer relevant once they are ready to transmit it. There are those who poor in writing but actually can verbally communicate their problem very well.

The need of recording, retrieving and playback of recorded document online. Current telementoring program is usually terminated once the problems of a client have been solved. The failure of recording consultation session and lack of recorded information management cause problem of future retrieving and references. Even if there is, most of the recorded information only includes semi-structured information such as dates, announcements, participant's names or e-mail contents. The function of online meeting records technology is rarely used to track group progress or to serve as public record of past actions and decisions. Instead, some of the telementoring programs rely on third-party software and application to store personal records and project information, set up the e-mail program for organizing the project messages and set a time schedule to manage weekly or monthly project tasks (For example: the Electronic Emissary project (Sanchez & Harris, 1996). The organization and management of a telementoring program are still primarily done manually that involve labor- intensive process. Mentor and facilitator in setting a well-planned online mentoring program in maintaining the mentoring relationship should put some efforts.

The above situations motivate the conduct of this research by developing an online instructional consultation model, namely Online Instructional Consultation (OICon) model, that facilitate consultation among student and facilitators for mentoring program in Higher Education Institution (HEIs). Specifically, this model is constructed based on the conceptual considerations of principles and guidelines as suggested by Steven (2002). The holistic approach is adapted in this system by designing multimedia components in providing supports starting from scheduling the by consultation time until the termination of the session as well as managing the recorded document online.

According to Fagan, Newman, Paul and Murray (2006), it is necessary to determine the selection of technology for e-consultation based on the actor's goals and needs. In addition, the consultation processes are also need to be considered in identifying appropriate ICT tools for each stage. The idea of implementing ICT tools for consultation in Malaysia higher education institution is by recruiting participants and adopting the technology. The remaining part of this paper will focus mainly on the background study of existing e-consultation of models, consultation processes in HEIs, e-consultation

principles and guidelines and matching of computer-mediated communication tools based on these guidelines and consultation processes. Lastly, OICon model is proposed and its key differences from other models and telementoring programs are described.

2. Background Study

2.1 Reviews on Existing E-Consultation of Various Contexts

The common e-consultation model usually consists of the basic components, collaborative tools and their functionality, capability and consultation processes. Two existing online consultation models are reviewed and discussed in the following section.

2.1.1 Reviews on Existing E-Consultation of Various Contexts

Financial service consultation (Tanaka, Koga & Yajima, 1999) provides assistant for customers in completing tele-consultation through touch screen interface at the client side. It is designed as a help desk system that serves only one client at a particular time. The designation of this consultation takes into consideration various participants' remote conversation skills, roles, and asymmetrical communication between customer and staff. Besides that, it is designed based on the e-consultation processes as shown in figure 1.

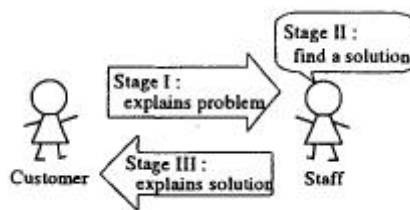


Fig. 1. Consultation Processes

Two functions that provide support for asymmetrical communication are tele-monitoring and teleoperating. Both staff's and customer's terminal are provided with window for tele-operating but with different functions. A customer has the knowledge about his or her problems but do not have the skill in solving them. Thus he or she is required to explain problem to the consultant that that has the knowledge in solving his or her problem by using text chat component and the videophone (see Stage I). Customer's terminal side activities are then captured and being observed at the window of the staff's tele-monitoring terminal. At the same time, the staff is trying to find a solution (see Stage II). Tele-operating window at staff terminal is embedded with functional button that controls several activities such as the map or figure that are to be displayed at customer's terminal. This enables the staff to explain the problem (see Stage III) and guide the customer in completing the consultation procedure by remotely operating the customers' terminal. The financial service remote consultation system is real-time consultation conducted by using videophone or videoconference and share-window function. A consultant can provide instruction by remotely control the customer's terminal. In addition, the consultant can take control over the customer's

operation in order to provide support for customers who do not have the skills in using the system.

2.1.2 Virtual Consultation for Telemedicine Education

Virtu@l Consult@tion (see Figure 2) is a Medical Simulation-based Training model developed by Ortega et al. (2003). Its purpose is to provide support for medical students to simulate a medical consultation from different location, using the current pedagogical methods based on clinical cases and integrating electronic resources. Most of the available computer support systems do not support multi-users and synchronous environment (Ortega et al., 2003). Thus, Virtu@l Consult@tion focuses on synchronous consultation by adding some functionality in their model to compensate for the insufficient function in other models.

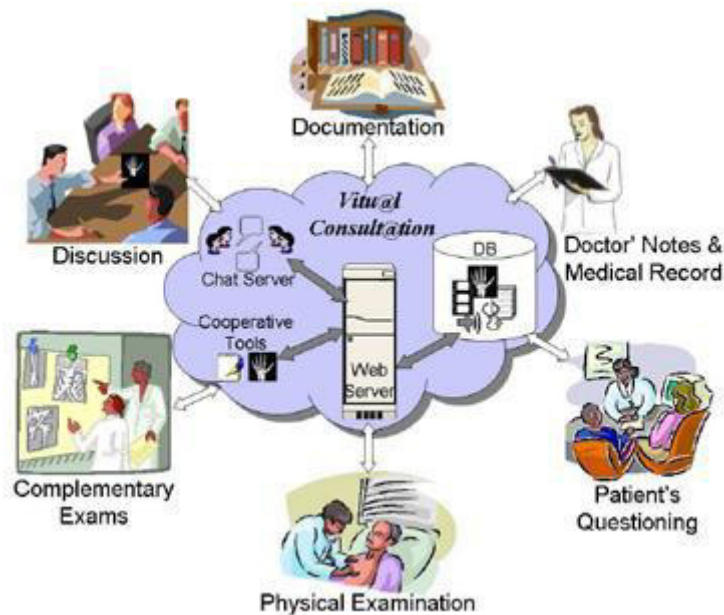


Fig. 2. Virtu@l Consult@tion Model with Main Functionality

The advantage of Virtu@l Consult@tion is the multimedia data exchange that makes medicine consultation simulation more realistic than the face-to-face simulation, besides enabling sharing of information among users. The main functionality of this model is the ability of the patients to be questioned by the physicians in guiding them to present their problem. Ortega (2005) emphasized that Virtu@l Consult@tion model provides an integrated medical education synchronous consultation, which mainly consists of web server, database, and the following functionalities:

- A medium for multi-users that include tutor, patient, secretary and physicians to collaborate and accelerate the access and delivery of information.
- Chat application interface and chat server.
- Multimedia data, principally medical imagery or photographs that use to complete the exams and medical records can be retrieved from graphic database and shares on cooperate electronic whiteboard.

- d. Cooperative tool Electronic whiteboard component implemented with modification tools that allow multi-users to zoom in, zoom out, write and draw annotation on the images.
- e. Sharing of physician's notes, medical records and comparison of their notes with other physician's notes.
- f. Images and sound player are implemented with the aim to simulate the patient's problem area. The multimedia information and learning material delivery during consultation session is stored in database.
- g. Accessing to external resources and document such as e-books, commented or interactive clinical cases, medical images and other can facilitate the learning process by providing extra knowledge.

Obviously, the Virtu@l Consult@tion provides more options of CMC tools and functionality as compared to the financial service consultation. The financial service consultation focuses on one-to-one interaction by using synchronous CMC tools. On the other hand, the Virtu@l Consult@tion did not implement synchronous communication tools but also include database, sharing notes function, cooperate tools such as shared-whiteboard as well as Images and sound player. Although videophone or videoconference provides a unique feature of real-time interaction among participants in paraverbal and nonverbal cues, textual chatting or input features should be applied as an optional support communication tools. Likewise, the display-change of the financial service consultation and shared-window whiteboard of the medical tele-consultation system can be applied in this online instructional consultation model as document or application presentation function.

For maximum effectiveness, a system should have the capabilities of conducting various activities during the remote consultation without any interruption. Such capabilities are video conferencing, instant messaging, application, and document sharing. By having these functions, time can be saved because only a few efforts is required whereby one consultant can serve many clients with similar problem simultaneously. Database and web server are essential to enable users to retrieve the recorded consultation documentation. From the comparative analysis between these two e-consultation models, it is found that an effective e-consultation model should be able to:

- a. Facilitate one to many consultations
- b. Provide participants various options of communication tool
- c. Request data stored in database.
- d. Request helps from peers other than facilitator.
- e. Increase problem-solving skills with the help of shared-window components.
- f. Obtain multi-participants views through online polling for decision-making stages.

In addition, some features and components that are found to be appropriate for the OICon model of HEIs include:

- a. Communication Tools:
 - . Question and Answer (Q&A)
 - . Live Chat Events / Instant Messaging
 - . Electronic Note Pad
 - . Shared-Window Function
 - . Video Conference
 - . List of Participants
 - . Shared-Whiteboard
- b. Consultation Contact Management and Feedback
- c. Multimedia Database

2.2 Online Consultation Principles and Guidelines

To help in guiding in the design and development of the online instructional consultation model, a more comprehensive and richer understanding of several principles are required. Steven (2002) proposed top ten tips of designation of e-consultation for promoting the civic education in policy. Since not all the guideline are suitable for instructional consultation, thus we study and extract the suitable guidelines, adapted seven out of the ten of these Principles and Guidelines as illustrated below in figure 3.

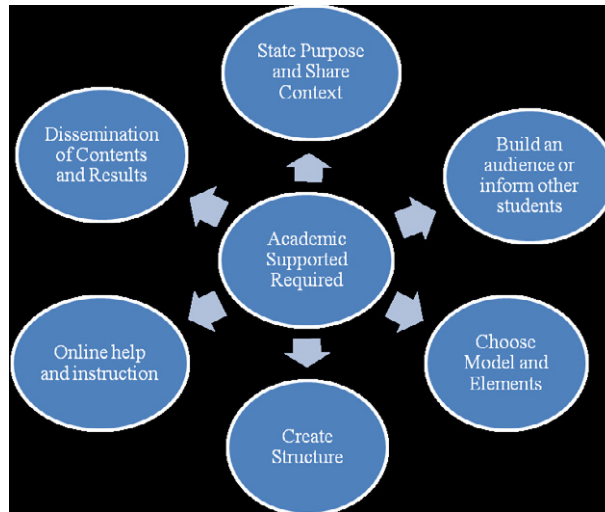


Fig. 3. Online Consultation Principles and Guidelines as suggested by Steven (2002)

The first guideline is the required academic support. Viewing from instructional consultation perspective, there must be an academic desire as the input and a willingness to consider that input in the decision-making process. This academic support is the core domain in governing the other guidelines. Next, the second guideline is related to the stating of the consultation purpose and shared contexts. It is necessary to give participants some information regarding the consultation issues before starting the online consultation session either through downloadable discussion document or web sites (Fagan et al., 2006). Then, the third guideline is about building the audience and informing others. Recruitment of people before starting the online consultation session is crucial as most of the people are not aware of the online published announcement. Steven (2002) posits that the participants need to be encouraged to join in the announcement list of so that they can subscribe whenever possible.

The fourth guideline concerns with the choosing of the right model and elements. For the instructional consultation in HEIs, the communication mode chosen should match the consultation purpose. It must also take into consideration the time factor since mentoring programs have differences in duration. These communication components can be categorized into synchronous and asynchronous communication tools. Based on the above descriptions, the major components suggested by Steven (2002) that are found to be suitable include the following:

- a. Question and answer (Q&A)
- b. E-mail
- c. Document comments

- d. Instant Messaging
- e. Online polling

Meanwhile, Steven (2002) emphasizes on creating the online event structure that has the beginning to an end as stated in the fifth guideline. Besides offering 24-hours, and seven-days-a week availability of consultation service to students, this model should make use of the real time communication benefit that provide a sense of community and immediacy for user. In the sixth guideline, Steven (2002) suggests that online consultation events should have an online facilitator that help to keep the event flowing and on task. Likewise, Gagne (1992) in his nine events of instructional also states that instructor should provide learner the guidance to help them stay on track. This means that they are given the authority to remind organizational decision-makers of their commitment to participate, and deal with problems behind the scenes as required. The facilitator's role is to regulate the flow of conversation and control the consultation activities as well as proposing solution. The last guideline refers to the dissemination of consultation contents. People should be aware of the contents of the online events so that their opinions and comments can be shared. Through the online announcements, people can obtain knowledge and issues of the consultation.

2.3 Online Instructional Consultation Processes for HEIs

In designing the OICon model, the holistic approach is emphasized by including three core phases for instructional consultation in higher education: Pre-consultation, online consultation session and post processing phase. These principles and guidelines are adapted to the online instructional consultation processes as illustrated in figure 4.

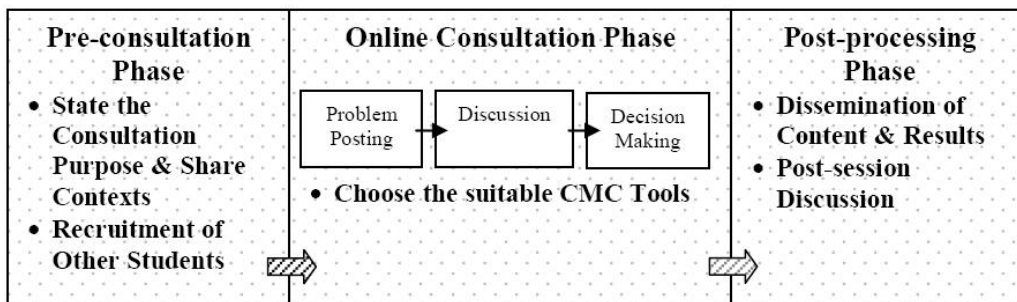


Fig. 4. Adaption of e-consultation Principles and Guidelines with Online Consultation Processes

In the first phase, before starting an online consultation session, it is necessary to state the consultation purpose and share the consultation contexts. It is necessary to give participants some information regarding the consultation issues before starting the online consultation session either through downloadable discussion document or web sites (Fagan et al., 2006). Assuming that the students and lecturers may feel doubtful on the purpose of online events, it must be stated clearly so that both participants are aware of the shared-context and readable information. Besides that, recruitment of people before starting the online consultation session is crucial as most of the people are not aware on the online published announcement. The pre-consultation processes, begins with student making online appointment, scheduling consultation hour, and sending upcoming consultation events and details through e-mails. To have more participants, the student will send invitation to other peers. Besides that, lecturer can make online announcement to have more participation in the online consultation session.

Many authors and researchers proposed consultation processes by dividing the consultation model into three phases: entry level, analysis-diagnosis, and problem solution (Brokes, 1975; Kurpius & Brubaker, 1976; Davies, 1975; Schein, 1969, 1978; Argyris, 1970; Havelock, 1973; Caplan, 1970). During the online consultation session, three sub processes are included: problem posing, discussion, and decision-making. In general, the consultation process will be terminated after the client's problem had been solved. However, for online instructional consultation, some of the mentoring programs involve long term relationship while some are short-term. Thus, an effective telementoring should be implemented with repository that can keep consultation contact and contents as archive.

To compensate for miscommunication due to lack of nonverbal cues and the need of competency in written communication and technical skills, blending modes communication tools are included such as video conference component, and leave comments feature in video form. Auditory and visual cues that are included in the videoconference are important in which the movement of facial gesture, hand gesture, and eye movement may influence the flow of conversation. It is believed that this interactive element is the key to success when combined with well-planned, student-centered instruction (Greenberg, 2004; Omateyes, 1996). The blending modes of CMC tools had make consultation easier by providing users with various options to suit their online communication pattern and consultation environment. For those who need a consultation session during emergency, synchronous communication tools would be the preferred choice.

Steven (2002) emphasized that dispersed consultation contents and results are important to promote the civic education. However, for instructional consultation, we make the consultation contents and results accessible by the group member of the particular consultation session. Lecturer has the ability to monitor unauthorized access to specific consultation content. Instead of sharing decision-making and consultation results, we suggested that there should also be an online post-session discussion platform that supports discussions between peers who are not physically present in the same room, or at the same time. This online discussion helps participants to contribute ideas, reflect on consultation issues, and promote the sharing of knowledge among peers.

3. Online Instructional Consultation (OIcon) Model

In this section, the discussion is about the developed online instructional consultation (OIcon) model that is integrated with suitable CMC tool. The integrated model provides a complete package of features needed to assemble, administer, and facilitate comprehensive e-consultation for HEIs. There are five domains involved in this model, which are personalization, consultation processes and task involved, features and multimedia communication components, consultation document, and management involved in this model. Figure 5 shows the Online Instructional Consultation (OIcon) model that has been developed. The selection of media to be implemented in the OIcon model is based on the online consultation processes, tasks involved, and user requirements. There are four domains that include personalization, consultation processes and task involved, features and multimedia communication components, consultation document and management.

3.1 Personalization

Facilitators and students have their own authentication to access the OIcon using unique usernames and passwords. Users may search and view the announcements, news, calendar events, and help documentation. They can even send feedback form to the administrator. Students in the university level are not supposed to be spoon fed in obtaining knowledge. In fact, they need to be resourceful in searching for help. For this reason, we provide online platform that include with search engine function in which

protégé can search experts' information details and their area of expertise from online databases is provided.

3.2 Consultation Processes & Task Involved

In general, there are three core phases (see Table 1) involved in the instructional consultation of HEIs: Pre-consultation, which are online consultation session, and post-consultation. Consultation session contains sub-tasks, which are online consultation session, problem posting, discussion, and decision making.

Table 1. Consultation Phases and Common Tasks

Phases	Processes and Task involved
Pre-consultation	<ul style="list-style-type: none"> • Student make appointment online • Consultation time scheduling
Online Consultation Session	<ul style="list-style-type: none"> • Send Invitation mail • Students post problem • Students and lecturers discuss the problem • Lecturer provide solution
Post-session Discussion	<ul style="list-style-type: none"> • Retrieving and playback of recorded session online • Peers online collaboration (Synchronous and Asynchronous) • Retrieving of consultation documentation uploaded by facilitator.

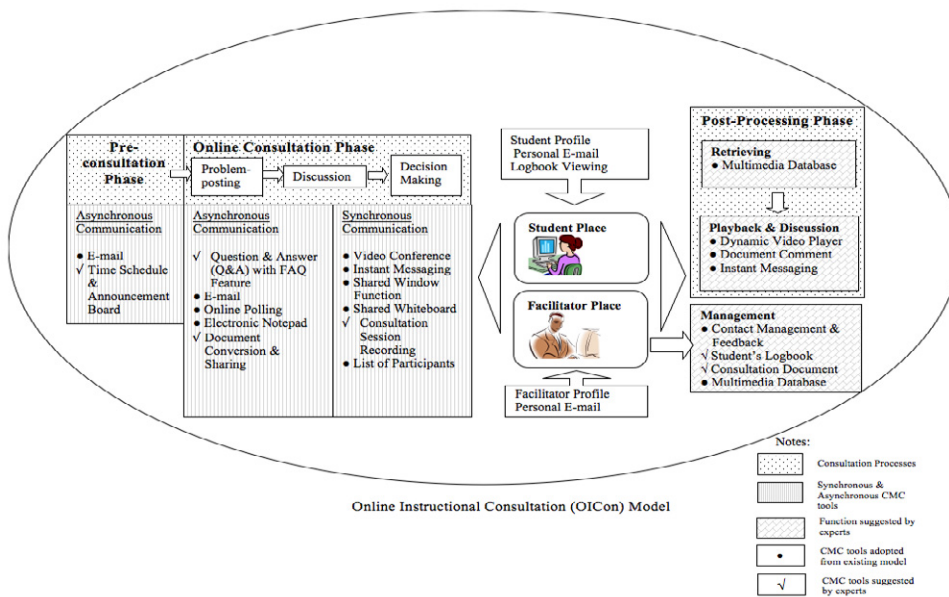


Fig. 5. Online Instructional Consultation (OICon) Model

3.3 Features and Multimedia Components

Twelve multimedia components have been proposed as derived from the literatures and e-consultation models. These components and features are consisting of asynchronous and synchronous communication components as listed table 2. In order to retain the interactivity as in the face-to-face consultation, modification on these communication components is necessary. For example, customization of participant lists by adding “raise hand” function to enable students to have control over the online collaboration when presenting their point of views. Although the consultation applies the facilitator-led approach, the used of self-paced led approach with peer discussion after a consultation session may give better results. Seven new features and components are proposed which are:

- Frequently Asked Question (FAQ)
- Document Conversion and Sharing function
- Attendance List or Logbook Management
- Time Scheduling and Announcement Board
- Consultation Session Recording, retrieving and playback function
- Consultation Document Management
- Dynamic Video Player

Table 2. Asynchronous and Synchronous Communication Components

Asynchronous Communication	Synchronous Communication
<ul style="list-style-type: none"> • Question & Answer (Q&A) with FAQ feature • E-mail 	<ul style="list-style-type: none"> • Video Conference • Instant Messaging
<ul style="list-style-type: none"> • Online Polling • Electronic Notepad • Time Schedule & Announcement Board • Document Conversion & Sharing 	<ul style="list-style-type: none"> • Shared Window Function • Shared Whiteboard • Consultation Session Recording • List of Participants

3.4 Consultation Contents

In an online consultation environment, the online attendees mostly contribute the contents. For example, the members together with the consultation document, and recorded consultation session upload presentation files. The administrator creates other contents such as user manual, instruction video, latest news and events. There are three main categories of OICon contents based on personal and group domain. Personal contents can only be granted by the owner consists of student’s personal details, and e-mail address. Whereas group content are accessible for all the members, allowing the information sharing among them, for example, sharing of consultation document. Other contents such as announcements, recorded consultation session, and calendar events are eligible to be granted by all users including the nonmembers.

There are two types of consultation contents as shown in table 3. They include audio-visual recording session and other consultation document such as presentation file uploaded by participants during or after consultation session. Both of these consultation contents and documents uploaded can be retrieved using search engine. Consultation recorded session in audio-visual form can be playback through flash video player that is embedded in web sites. Students are allowed to download the consultation documents.

Table 3. Audio-visual recording session and consultation documents

Audio-visual Recorded Document	Other Consultation Document
<ul style="list-style-type: none"> • Conduct video conferencing through Live Streaming Media Player, the recorded media can be playback through Recorded Media Player. • Retrieving of the media through search engine from multimedia database. • Media are organized in list of dynamic thumbnail. 	<ul style="list-style-type: none"> • Enable students to retrieve and download consultation documents and content from the repository. • Retrieving of documents through search engine from database • Documents are organized in thread and sequential form

4. OICon CONSULTATION PROCESSES

In addition, based on the consultation with the three experts in this research, seven features and functions that are crucial for this online consultation development include; FAQ, Document conversion and sharing function, logbook management, time schedule and announcements board, consultation recording, retrieval and playback function, consultation document management and dynamic video playback. Thus, there are all together nineteen features and components identified that are crucial for this online consultation model as shown in table 4.

Table 4. Matching of CMC tools and Features with Consultation Processes

Phase	Process and Tasks Involved	Matching of CMC tools and Features
Pre-consultation	<ul style="list-style-type: none"> • Student make appointment online • Consultation time scheduling • Send Invitation mail 	<ul style="list-style-type: none"> • Consultation Time Scheduling & Announcement Board • E-mail
Online Consultation Session	<ul style="list-style-type: none"> • Students post problem • Students and lecturers discuss the problem • Decision Making 	<ul style="list-style-type: none"> • Audio or Video Conferencing • List Of Participants • Electronic Notepad • Shared window Whiteboard • Shared-screen function • Instant Messaging • Survey/Polling • E-mail • Multimedia Database • Document Conversion and Sharing • FAQ
Post-processing Phase	<ul style="list-style-type: none"> • Retrieving and playback of recorded session online • Peers online collaboration (Synchronous and Asynchronous) • Retrieving of consultation documentation uploaded by lecturer 	<ul style="list-style-type: none"> • Consultation Session Recording, Retrieving and Playback Online • Consultation Contact Management and Feedback • Multimedia Database • Dynamic Video Player • Document Comment • Instant Messaging

Pre-consultation phase includes the introductory information of upcoming consultation, appointment making, announcement making, time and date scheduling and invitation mail sending. In this phase, students that are willing to seek help from their supervisor are the initiator. They send online appointment form to request for online consultation. Meanwhile, a notification mail that contains the minutes and agenda meeting are sent to students' mailbox. For this respect, e-mail is integrated due to their ability in reducing ambiguity of communication. Sometimes, lecturer initiates the consultation session. To handle

this, the time schedule and announcement board components are added to OICon model to enable lecturers to make announcement and send e-mail to invite their mentee to join in the consultation.

During the consultation session, students explain their problem to lecturer. The lecturer may ask for clarification to understand more on the student's problem and search for solution. Several important tasks during problem posing, online discussion, and decision-making session require multiplicity of cues and immediacy of feedback. Text-based CMC cannot communicate nonverbal information and gesture cues as possess by videoconference component. Hence, for this purpose of communication, combination of rich and lean medium is necessary. These CMC tools include audio-visual conferencing, instant messaging, email, online polling, electronic notepad, shared-window function, shared-whiteboard and list of participants. Others CMC tools and functions that recommended by educationist and IT experts are frequently asked questions (FAQ) component, Document Conversion and Sharing and consultation session recording function.

Post-consultation phase include post session discussion and follow-up of delayed consultation session. During the decision-making session, the lecturer may suggest and explain the solutions. This session may end up when they achieve a consensus or left the consultant to decide the solutions. Sometimes, the less rush consultation conclusion may delay to the next time consultation. Not all decisions can be made on the short time and may delay to next consultation time. Thus, consultant may need to retrieve previous recorded consultation document, agenda and list of participants involved by sending another invitation mail. For this respect, a combination of communication technologies with consultation document management feature can also create a spectrum of media richness, increase the effectiveness of information delivery and thereby leading to higher performance of satisfaction.

Indeed, Steven (2002) stated that dissemination of consultation contents and results are important for those who absent to consultation session and willing to get the knowledge though post-session discussion among peers. For this reason, OICon model provides post-session discussion platform with instant messaging feature, recruit peers to discuss on the recorded-consultation session as well as present their point of view by leaving comments in either textual or audio-visual form to compensate for the need of written communication and technical skills. Consultation contacts and feedback management feature helps facilitator to inform and give feedback for mentees. Besides that, facilitator's terminal is also provided with consultation and documents management that does not included in the other models.

5. KEY DIFFERENCES OF OICON MODEL FROM OTHERS MODEL

It is important to note that the features and components that were listed in this model as supporting components for consulting service online are not meant to represent an exclusive list. Instead, the "mapping" of CMC tools to the manner and strategy provides a useful source to facilitate the relevant consultation activities. The key differences of OICon model from other models are:

- a. The OICon model takes into account the holistic consultation approach starting from pre consultation, consultation session and post-session discussion. Before a consultation session starts, it is necessary to recruit people and inform them the purpose and agenda of consultation as suggested by Steven (2002). Sometimes, the lecturer initiates the consultation session. For this reason, researcher added the time schedule and announcement board components to the OICon model in which this component enable lecturers to make announcement to invite their mentee to join consultation besides sending invitation mail. Whilst, differences from other consultation models and telementoring programs that emphasized only on synchronous communication tools (For example: Tutor.com and Financial Service Remote Consultation model) and asynchronous communication (For example: MentorNet), OICon model consist of blending modes of communication tools that not only provide verbal cues but also nonverbal cues that contribute to a sense of social presence among participants. Human are not all alike. Some of them are poor in

writing skill but perhaps may communicate their problem effectively through video and audio conference. Some of them are kind of shy and may found instant messaging and e-mail the easy way to poses their problem. Besides that, the OICon model consists of consultation session recording feature that were not included in the Financial Service Remote model and Virtu@l Consult@tion for Telemedicine Education model. Recorded consultation session is important for future retrieval and reviewing. This differs from other telementoring systems such as MentorNet and Emissary Telementoring in which they emphasize only on e-mail message archive. Audiovisual recording decreases information loss for meeting recording as compared to written note recording since a verbatim record is produced (Whittaker et al, 2006). Dissemination of consultation contents and results are important for those who were absent from the consultation session and willing to get the knowledge though post-session discussion among their peers. The OICon model is equipped with post-session discussion platform with instant messaging feature that can recruit peers to discuss on the recorded-consultation session as well as presenting their point of view by leaving comments in either textual or audio-visual form. Differs from the other e-consultation models, this OICon model takes into consideration the nature of long-term relationship telementoring. Consultation contacts and feedback management feature helps facilitator to inform and give feedback for mentees. Besides that, facilitator's terminal is also provided consultation and documents management that does not included in other model.

b. Seven new features and components are proposed which are:

- Frequently Asked Question (FAQ)
- Document Conversion and Sharing function
- Attendance List or Logbook Management
- Time Scheduling and Announcement Board
- Consultation Session Recording, retrieving and playback function
- Consultation Document Management
- Dynamic Video Player

c. Students and facilitator different online consultation terminal in which:

- Facilitator is given privileges to control student's activities by adding "Pass the ball" Function and "Kick the user" Function
- Facilitator is given the privileges to record the consultation session, edit or delete consultation-recorded session as well as publish it on dynamic video playlist

All experts that reviewed it acknowledge this OICon model. Mr. Mohamed Nizam Saad, a lecturer from College of Arts and Science (CAS) added that this model is different from other e-learning system as it includes logbook management features that differentiate it from other e-learning application. The model clearly portrayed all the features and components of an online consultation system. However, Dr. Michael Morgan suggested that the model should include the capability of keeping track of the consultation recorded session especially with the participants.

6. Conclusions

There are three issues and challenges relating to the existing telementoring program which are (a) miscommunication due to lack of nonverbal cues, (b) the need or competency in written communication and technical skills (McLoughlin, Brady, Lee, & Russell, 2007; Ensher, Heun, & Blanchard, 2003), and issues concerns with recording, retrieving and reviewing of consultation document. In order to compensate for these issues and challenges, a model for online consultation for HEIs known as the OICon

model is proposed. The OICon model consists of five domains that are personalization, consultation processes and task involved, features and multimedia components, consultation content and management. The multimedia communication components and features are determined from literature review particularly on existing e-consultation model for various contexts, major e-consultation as suggested by Steven (2002) as well as experts' recommendation. These components and features are matched based on principles and guidelines as well as on the online instructional consultation processes. The OICon model is then transformed into a prototype system to be tested by six lecturers and 34 students from College of Arts and Science at Universiti Utara Malaysia (UUM). The research study found that users are relatively positive towards the implementation of multimedia communication tools for consultation in higher education and they agreed that the OICon model is crucial for enhance and promote interactivity for consultation among students and lecturers. Besides that, this model is acknowledged by three IT and educationist experts and is suitable to be applied for online instructional consultation development.

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References

- Argyris, C. (1970). *Intervention Theory and Method: A Behavioral Science View*. Reading, Mass. :Addison-Wesley.
- Brokes, A. *A process model of consultation*. (C.A. Parker, Ed.). (1975). In *Psychological consultation : helping teachers meet special needs*. Minneapolis: Leadership Training Institute, University of Minnesota.
- Caplan, G. (1970). *Theory and Practice of Mental Health Consultation*. New York: Basic books.
- Chan, D.W. (2000). The development of mentorship programs at the Chinese University of Hong Kong. *Roeper Review*, 23 (2), 85-88.
- Davies, I. (1975). Some aspects of a theory of advice: the management of an Instructional developerclient, evaluator-client relationship. *Instructional Science*, 3, 351-373.
- Ensher, E., Heun, C., & Blanchard, A. (2003). Online mentoring and computer-mediated communication: New directions in research. *Journal of Vocational Behavior*, 63, 264-288.
- Fagan., G. H., & Newman, D. R.. (2006). E-consultation: evaluating appropriate technologies and processes for citizens' participation in public policy. Retrieved August 12, 2009, from http://eprints.nuim.ie/468/1/ecrp_report.pdf.
- Gagne, R., Briggs, L., & Wager, W. (1992). *Principles of Instructional Design* (4th Ed.). Fort Worth, TX: HBJ College Publishers.
- Greenberg, A. (2004). Navigating the sea of research on videoconferencing-based distance education: A platform for understanding research into the technology's effectiveness and value. Retrieved October 24, 2010, from <http://www.wainhouse.com/files/papers/wrnavseadistedu.pdf>

- Havelock, R. (1973). *The Change Agent's Guide to Innovation in Education*. Englewood Cliffs, N.J., Educational Technology Publications.
- Kurpius, D. J. & Brubaker, J. C. (1976). *Psycho-education Consultation: Definitions, functions, preparation*. Bloomington, Indiana: Indiana University.
- McLoughlin, C., Brady, J., Lee, M.J.W. & Russell, R. (2007). Peer-to-peer: An e-mentoring approach to facilitating reflection on professional experience for novice teachers. *Proceedings of the 2007 Australian Association for Research in Education (AARE) Conference*. Fremantle, WA.
- Muller, C. B., and Single, P. B. (1999). Encouraging women students to persist in engineering and science through industrial mentoring using electronic communications. *Proceedings of the Annual Frontiers in Education (FIE) Conference*.
- Omatseye, J.N. (1999). Teaching through tele-conferencing: Some curriculum challenges. *College Student Journal*. 33(3), 346-353.