INFLUENCE OF ATTRIBUTES OF INNOVATIONS ON THE INTEGRATION OF WEB-BASED INSTRUCTION BY FACULTY MEMBERS

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Abstract

More and more faculty members are using web-based instruction as part of their course or as complete courses, which has resulted in an entire web-based instruction programs and virtual universities. As such, web-based instruction is one of the major areas that are becoming key to the development of the Web. To the contrary, despite having accessible hardware, training, and discipline-specific media, some faculty members are hesitant to adopt web-based instruction. This study investigated factors influencing the decision process to adopt or reject web-based instruction by faculty members and results show that attributes of innovations such as trialability, observability, compatibility, relative advantages, and complexity, play a major role in the process.

Introduction

More and more university faculty members are using web-based instruction as an integral part of instructional activities (Daugherty & Funke, 1998). That is, as Burnett (1999) affirms, faculty members are using web-based instruction as part of their courses or as complete courses. As a result, in the institutes of higher education, there are entire programs that can be completed via web-based instruction and there are virtual universities, which have no physical campus, but which operate totally over the Internet. In this respect, Tim Berners-Lee, the developer of World Wide Web, observes that web-based education is one of the major areas that contributes to the development and expansion of the Web (Beangle, 2000). Beangle supports that view in that "Since the creation of the World Wide Web, its potential as an instructional tool and learning environment, has attracted intense academic interest and commercial development" (p. 367) and so, according to Holt, (1999), web-based instruction is here and expanding. Institutions and faculty who fail to adopt web-based instruction will be bypassed by those who adjust and embrace it and eventually made obsolete. As such, Holt adds that institutions and faculty members who adjust and embrace web-based instruction will be part of the greatest technological advance in education since the printing press.

However, in spite of the proliferation of integration of web-based instruction in the universities, there are a large number of faculty members who are hesitant or reluctant to adopt technology for instruction (Jacobsen, 1998). How then do faculty members make decisions to adopt or reject web-based instruction? In their action research, Groves and Zemel (2000) addressed the question of the perceived barriers and needs for technology adoption and use in higher education. Their findings show that in order to use technology in teaching, respondents wanted accessible hardware, training, and discipline-specific media that are easy to use. Such requirements are available in the universities yet there are faculty members who are still reluctant to adopt instructional technology especially web-based instruction, which is rapidly becoming one of the major avenues to deliver courses to students (Nations, 2000). For example, in the current study, the involved university – Ohio University – provides workshops throughout the year on teaching the larger lecture class, applications of technology in the classroom, and strategies for cooperative learning for its faculty members. At the same time, Ohio University offers technical and instructional consultants, project design and curricular development services to the faculty members who are interested in integrating instructional technology in their teaching activities. Ohio University has also bought a site license for Blackboard and it provides the faculty members with any educational software that they need for instruction. In addition, since 1999, Ohio University started a student-computing project in which 4647 desktop computers were installed in the first years' halls of residence as well as in the resident assistants' rooms. These computers have Microsoft Windows 2000, Internet applications like Web browsers, Telnet Clients, Instant Messaging software, QuickTime and Acrobat Reader among others. There are also grants available from within or without the university for faculty members willing to integrate or to redesign their courses with instructional technology, yet not all faculty members have adopted instructional technology in general and particularly web-based instruction.

Methodology

To find out why accessible hardware, training, and discipline-specific media do not lure all the faculty members into using instruction technology, the researcher conducted a qualitative research with a focus on web-based instruction. This study addressed the question, "What factors influence the decision process to adopt or

reject web-based instruction by faculty members?" and Rogers (1995) diffusion model of the innovation-decision process provided a theoretical framework for the study. Therefore, the major aim of this study was to get first hand information from the faculty members who were either using web-based instruction or those that were yet to make their decision to adopt or reject it and those that have rejected web-based instruction. To acquire this information from the faculty members, the researcher used qualitative research method for this study.

The researcher conducted interviews with 31 faculty members and 5 administrators at Ohio University and used participant observations to collect data by attending a conference, a workshop, and a seminar on web-based instruction offered to faculty members at Ohio University. The faculty members who participated in this study were those who either had adopted web-based instruction, those planning to adopt web-based instruction, or those who had rejected web-based instruction. This choice of participants was relevant to this study in that all the faculty members were at liberty to acquire the necessary skills for the use of web-based instruction free from the university. Likewise, the same technical support was available at the university for all the faculty members, and the same resources (Computer hardware and software) were at their disposal at any time that they needed them. Consequently, this choice eliminated differences that might have resulted from faculty members being located in different universities, differences in training, available resources or their accessibility to the faculty members, or due to differences in the availability of financial and technical support to the faculty members. All the administrators who participated in this study were involved in supporting faculty members who were using or were planning to use web-based instruction.

This article investigates the attributes of innovation that this study revealed as playing a major role in the innovation decision process among faculty members as they decide to adopt or reject web-based instruction. The conclusions and implications of those findings are then presented.

Attributes of Innovations

According to Rogers (1995), the attributes of innovations are "the characteristics of innovations as perceived by individuals" (p. 15). The attributes of innovations consist of relative advantages, compatibility, trialability, observability and complexity. Although Rogers portrayed all the five attributes as major factors in the diffusion of innovations, this research study shows that complexity, compatibility, and relative advantage are the most salient attributes when faculty members make decisions to adopt or reject WBI. As such, the research findings did not show trialability and observability as having a great influence in the decision process to adopt or reject web-based instruction by faculty members.

Trialability

Trialability is "the degree to which an innovation may be experimented with on a limited basis" (Rogers, 1995, p. 16). Findings from this study showed that trialability did not have an impact on the decision process to adopt or reject WBI by faculty members. That is, only one faculty member reported to have tried the use of WBI before implementing it into her teaching activities and even in that case, she used an authentic course that she was planning to teach the following quarter. The rest of the faculty members reported to have learnt how to develop, implement and maintain the course web sites with authentic courses. In this case, as reported by these faculty members, they managed to learn because they made their students aware that they were learning to use WBI as they taught the courses. As such, together with the students, these faculty members could troubleshoot and try new ways of making WBI most effective for the learning and teaching activities.

Observability

Rogers (1995) defined observability as the as, "the degree to which the results of an innovation are visible to others" (p. 16). Observability did not contribute much in the decision to adopt or reject WBI by faculty members. As the study findings reveal, faculty members attended conferences and staff meetings in which their colleagues demonstrated how they were effectively using WBI, but that only gave them the information about the existence of WBI and the different ways of using WBI, but did not influence their decide to adopt or reject it. Thus, after gaining that knowledge, faculty members pursued more information about the use of WBI either by attending training courses, reading books or by collaborating with colleagues to learn more and eventually to adopt WBI. In fact, the faculty members who rejected WBI mentioned that the demonstrations were good, but they did not suit their courses. As a result, getting the information about the existence and seeing examples of how to use WBI did not contribute much to the faculty members as they made decisions to adopt WBI; however, one-on-one training in WBI and a self-study of WBI helped in decision-making.

The following section presents findings on how compatibility, relative advantage and complexity affect the decision process to adopt or reject WBI by faculty members.

Compatibility

Compatibility is "the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 1995, p. 15). The current research findings show that the compatibility of WBI to the way faculty members teach might be an important factor in its use depending on the way different faculty members perceive effective teaching. These findings are in the three factors related to the compatibility or incompatibility of an innovation that Rogers (1995) mentions: Socio-cultural values and beliefs, with previously introduced ideas, or with client needs for the innovation.

Socio-cultural values and beliefs.

In this research study, faculty members who declared to have rejected WBI emphasized that physical presence is the best way to teach. That is, using WBI is not an improvement to their traditional methods of teaching because it takes away the joy of teaching. They believe face-to-face teaching is freer and less structured, enabling them to establish warm, personal and productive relationships with their students. Besides, these faculty members emphasized that using technology is not a good way to discuss complex issues with their students. Thus, considering that "teachers are generally regarded as independently practicing professionals who make decisions about specific instruction and assessments to use in their classrooms" (Lee, 2001, p.4), these faculty members rejected WBI because they did not view it compatible with their belief about effective teaching.

On the other hand, there were faculty members who reported that WBI is compatible with their teaching styles. They said, for example, that being able to project their course web sites in the classroom made it possible to teach through the use of visual images. That is, visual images from the web are very important for some courses for they enhance clarity in the explanation of concepts to students. These faculty members further noted that using WBI made it possible for them to use different teaching materials because the web is like having a large-sized library in the classroom.

Thus, what a faculty member values matters when he or she is deciding to adopt or reject WBI in that, if a faculty member finds value in WBI, he or she may give it a priority and invest time and energy in it. Alternatively, a faculty member who views WBI as incompatible with his or her beliefs may decide not to give it further consideration, hence rejecting it.

Previously introduced ideas.

Findings from this study show that, in the teaching process, faculty members identify the most effective ways to teach such that they eventually become reluctant to change. One such faculty member, who has taught for 35 years, emphasized that, "after working for many years, faculty members become more critical and conservative at new ideas because they have seen some of the traditional pieces pass the test of time." Thus, in the view of these faculty members, as mentioned by a faculty member who had taught since 1966, the use of WBI is for the faculty members who are "new" in teaching because, "when faculty members are new in teaching, they are curious to try different ways of teaching before they establish the best way to teach."

Likewise, two of the faculty members who rejected WBI reported that they have used different types of instructional technology in the past, but eventually they went back to using the traditional methods of teaching. These faculty members were reluctant to implement the use of WBI into their teaching activities. Other faculty members who rejected WBI mentioned that they had tried other instructional technology such as PowerPoint and found that it distracted the flow of the class discussions.

Client needs for the innovation.

Cited in Rogers (1995), Hassinger ascertains,

Individuals will seldom expose themselves to messages about an innovation unless they first feel a need for the innovation, (and that) even if such individuals are exposed to these innovation messages, such exposure will have little effect unless the innovation is perceived as relevant to individual's needs, and as consistent with the individual's attitudes and beliefs (p. 164).

This research study shows that faculty members who learned about WBI when looking for ways to meet their instructional needs were likely to adopt WBI unlike the faculty members who learn about the use of WBI with an intention to create a need for it. For example, one of the faculty members who rejected WBI reported that she attended training sessions to see whether she could identify a need to use Blackboard CourseInfo in her teaching activities, but she did not find any and so she did not adopt WBI. On the other hand, one faculty member who adopted WBI reported that he learned about Blackboard CourseInfo while searching for an instructional

technology that could meet his instructional need. He said that when a colleague told him about Blackboard CourseInfo, he attended a workshop to learn more about it and he realized that it was his best choice and so he adopted it in his course. Therefore, faculty members need to consider their course objectives and their students' needs before deciding to adopt or reject WBI.

As such, the faculty members who had not used WBI acknowledged that their colleagues were effectively using WBI, but they had not yet found a need for it in their teaching activities. Conversely, the faculty members who reported that WBI met their needs said that their students could use the web sites at any place and time, whether at home, in their dorms, or even when traveling. One of these faculty members noted that using WBI helped his students because "they (students) could do class projects easily within their lifestyle or time frame." In addition, faculty member using WBI for distance courses reported that students could register for online courses during their vacation because they did not have to be at the university to take the courses. Similarly, the students were able to graduate on time because online courses do not engender schedule conflicts as classroom-based courses can.

Research specialty was another factor identified in this study as influencing the decision to adopt or reject WBI by faculty members. That is, if the faculty members did not feel a need to use WBI in their research area, instead of developing course web sites, they concentrated on research that rewarded them more than effective teaching. Faculty members emphasized that, effective teaching contributes very little to tenure promotion and that what matters most is the research conducted by a faculty. One Faculty member portrayed a better view of this point in that,

We do not get rewards from the university for it (teaching) we get rewards for research though.
If you bring research money, they give you a kick back. The university does not reward teaching classes even in the tenure process.

This notion might be from the fact that, when hiring faculty members, the administrators believe that faculty members are competent teachers. That is, as one faculty member involved in faculty members' hiring process mentioned, "in my experience, faculty come in highly rated and they are very bright. Every time we have an open position, we get over 100 applicants and we take the very best." As such, universities do not give effective teaching all the weightage; rather, more emphasis is often placed on research projects that bring funds to the universities. Therefore, if the research project does not entail the use of WBI, then faculty members do not feel compelled to use WBI. In this respect, as most faculty members expressed, if use of WBI can be given a higher value as research is rated in the universities, it could be more easily adopted by the faculty members across the board than it is right now.

As a result, as affirmed by Solem (2000), any effort to promote Internet-based teaching in colleges should take into account faculty members' particular needs and circumstances rather than assume that instructional technology (including WBI) offers the same advantages and benefits to everyone.

Relative Advantages

Rogers (1995) defines relative advantage as "the degree to which an innovation is perceived as better than the idea it supersedes" (p. 15). Whether an individual perceives an innovation as advantageous or not is a factor in the adoption or rejection of that innovation. In the current study, all 31 faculty members who participated accepted that there were advantages to using WBI although five faculty members had not yet adopted the use of WBI. Among these five faculty members, two were planning to adopt WBI in the near future, while three of them had decided to reject it.

The 26 faculty members who have implemented WBI talked about different advantages from their experiences. These advantages can be categorized in Rogers' (1995) sub-dimensions of relative advantage that includes the degree of economic profitability, a decrease in discomfort, a saving in time and effort, immediacy of the reward, low initial cost, and social prestige. Among these sub-dimensions, low initial cost and social prestige had no influence on the faculty members when deciding to adopt or reject web-based instruction. The reason to this finding emanates from the fact that faculty members got free support services and grants from within or without the university for WBI. For example, seven faculty members reported to have adopted WBI after getting the PT3 grant from Ohio University. Three others mentioned that they were able to redesign their courses to integrate WBI due to the funding they got from the PEW grant aimed at encouraging colleges and universities to redesign their instructional approaches using technology in large-enrollment, introductory courses (Pew, 2002). Similarly, there was no evidence of social prestige, which might have resulted from the fact that faculty members

have the academic freedom in which they are free to choose the teaching approaches that they want as mentioned by one faculty member,

> In the academic world, faculty members have freedom to do whatever they want. There is no mandate to say, where is your web course, why don't you develop a web course? So there is more of a free will whether you want to offer a web course or not and faculty have to be convinced that they will have something to gain by offering a course by the web.

Economic profitability.

Seven faculty members from this study reported the reduction of printing costs as an advantage of using WBI. In particular, one faculty member from the College of Education reported that looking for a way to reduce printing costs made her and her colleague start using WBI. She said, "it is a damn reason and it is working… it is about 5 cents a copy…. It is okay we have reduced copying cost and finally we have our course on the web." When asked whether the idea of using WBI was from the administrators, she said that the administrators recommended that faculty members look for ways of reducing printing but they did not tell them how. It was the choice of that faculty member and her colleague to use the web to post course materials. In addition, the faculty members reported that, when the students had to buy a packet of those articles, it was expensive to them implying that reducing the amount of copying by posting the articles on the course web site was economically feasible for both faculty members and the students.

Decrease in discomfort.

As a faculty member from the College of Business remarked, "no one wants to completely rework a course that they have. They need very strong motivation to do that." In this case, decrease in discomfort from an existing way of teaching was a strong motivation to encourage faculty members to adopt WBI. In this research study, findings indicate that WBI has decreased the discomfort in various ways for the 26 faculty members who were using it. That is, three faculty members reported posting course materials on the web made it more convenient for them to distribute information to the students. One of them from the College of Health and Human Services said, using WBI made him to stop worrying about getting handouts to every student in his class. That is, if students miss a class, faculty members are no longer worried about how to get the information to them. Teachers can direct them to the online notes on his course web site and that as he concludes, "eases the difficulties for me as a teacher."

Faculty members associated WBI with the convenience in communicating to diverse students. That is, as expressed by a faculty member from the College of Fine Arts, "you need to tell somebody three times before they completely understand everything." In this case, that faculty member reported that before using WBI, "I had to create all my material in print [because]… all the communication need to be told to the students in print and verbally and also give them the information on the class server which is accessible only when you are in the department's computer lab." Hence, using WBI made faculty members to project visual images to their students as mentioned earlier, and the students were at liberty to print the information from the course web site.

In addition, faculty members reported that the use of WBI has motivated them to reconsider the way they had been teaching for a long time. For example, two faculty members reported that using WBI enabled them to start encouraging more critical thinking, more synthesizing of the concepts, more applying of the concepts rather than retelling the students what they could have read from the books. As a result, these faculty members revealed that they found it stimulating to rethink their courses by considering other ways of communicating with their students through WBI.

To the faculty members who rejected WBI, using WBI would bring discomfort rather than comfort in their teaching activities. For example, one faculty member said, "I think if I were going to be web-based, I would suffer personal deprivation, social withdrawal, I would say to myself, I do not want to do this I would rather go and write a book or I can be an accountant." As a result, they do not adopt web-based instruction.

Saving in time and effort.

This study revealed that faculty members are busy individuals and that infusing web-based innovations into teaching adds to their workload. In some departments, faculty members are expected to spend 40% of their time teaching, 40% on research and 20% on service. However, a faculty member from the College of Arts and Sciences mentioned, "with 15 hours per week, we already spend 67% of their time on teaching without using any innovations implying that we work overtime to accomplish all our responsibilities." She reported that adding innovations takes four hours in preparation for each hour of lecture.

Despite the time required for effective use of WBI, 26 out of 31 faculty members who participated in this study are used WBI. As the research findings show, these faculty members believed that people make time for what they value. Those who wanted to effectively use WBI spent a lot of time to learn and develop WBI in order to save time when they implement it in their teaching. As a faculty member in the College of Business said, "It takes a lot of time to save time."

Faculty members reported that using WBI enabled them to manage their time better. They said that class time is not always enough for discussions and for giving the assignments to students and so they used their course web sites to distribute assignments out to their students. In the same way, faculty members were able to keep in touch with their students on the days that the classes do not meet. Consequently, faculty members were able to clarify things that students might not have understood in class because students are able to ask questions at any time whether the class is in session or not. Likewise, if a faculty member remembered a point that he or she missed during the class time, he or she posted an announcement on the course web site for the students to read.

Similarly, Faculty members reported that using WBI allows students to complete their learning activities faster than when the faculty members did not use WBI. For example, two faculty members who were using Form · Z reported that using Form · Z and other applications has helped the students to represent their ideas in three dimensions much more accurately and more quickly. They reported that Form · Z had been an excellent application for web portfolios because students could save projects as VRML models, QuickTime animations, as well as JPEG images. In this case, these faculty members reported the projects that used to take years for their students to draw by hands with WBI they take couple of months. That is, as one of these faculty members said, using WBI, "has given us the ability to allow students to communicate their design more accurately on a more professional level quicker."

Immediacy of the reward.

The current study supports the idea of immediacy of reward in the use of WBI in various ways. All the 26 faculty members that were using WBI acknowledged that using it makes students become more engaged in learning. They reported, for example, that students were able to prepare for lessons before class time by answering questions posted on the course web sites. This preparation led to more interaction during class discussions and the students got very enthusiastic about the class. Likewise, when faculty members taught distance courses using WBI, students communicated more often with them. One faculty member, who used WBI to teach a distance course, reported:

The students got more interaction with me through the web than they would have done in a regular classroom. In the classroom, many times, they sit there, take notes and they never ask questions, and they just disappear. So, even if I see them face-to-face there isn't really a dialogue. On the web, they are forced to communicate because if they did not understand they could send me an email.

Other reasons for increased interaction between the teacher and the online students as mentioned by a faculty from the College of Fine Arts are,

In the face-to-face class interaction may be limited by the fact that some students could be facing somewhere else, others could be a little bit shy about asking a faculty member to repeat what he or she said or a faculty member may be addressing one student and so the other students do not get involved.

Therefore, using WBI gave all students the same opportunity to attend and respond to the information posted on the course web site.

Other immediate rewards to using WBI reported in this study are the reduction of students' note-taking and keeping faculty members focused on what they are teaching. Faculty members who had their class notes on the course web site said that they asked their students to print them before class and bring them to class such that in class, thy only needed to write a few additional notes to make the points clear to them. Thus, the students listen more carefully to the instructions and they participated more in class discussions. As one faculty member stated: "I do not like looking at the foreheads; I like looking into their eyes. And if they are writing they can't listen and write at the same time and comprehend as well." Furthermore, when faculty members projected their class notes on a screen, they could further delve into additional subject matter, thus accomplishing even more.

Therefore, when faculty members perceived WBI as more advantageous to use than other ways of teaching, they were more inclined to adopt it, but when they found no benefit from using WBI they rejected its use in their teaching activities. Thus, apart from low initial cost and the social prestige, the other sub-dimensions of relative

advantage presented by Rogers (1995) were evident as factors that influenced the faculty members' decision process to adopt or reject WBI in this study.

Complexity

According to Rogers, (1995) complexity is "the degree to which an innovation is perceived as difficult to understand and use" (p. 16). The complexity that faculty members faced in using WBI was a factor in their decision to adopt or reject. Difficulty to learn how to use WBI was mainly associated with the language used by instructors in training faculty members how to use WBI and the pace at which those instructors teach the faculty members. Three faculty members mentioned that the instructors used technical language that confused them and two others added that these instructors taught at such a fast pace that the novice faculty members were lost in the process. In addition, the faculty members reported that they went for training expecting to learn how to integrate WBI into their courses, but the training sessions focused on the features of the software.

Fear to learn new skills and reluctance to try something new contributed to the perception of WBI being highly complex among faculty members. Specifically, one faculty member reported that she was sure she would get through the fear of her learning curve and be able to use WBI effectively because she was also fearful of teaching her first class. Other faculty members associated a sense of complexity with lack of familiarity with WBI; because they did not grow up with WBI, to them, it seems difficult to learn. As such, how individual faculty members confronted fear affected their decision to adopt or reject WBI as stated by a faculty member who was using WBI, "you can't make faculty do it (use WBI), people by nature fear change sometimes…. I don't know what to tell faculty in order to embrace WBI, either they are going to embrace it or they are going to push it away because they are fearful of it."

> According to Pedroni (1996),
> The World Wide Web represents the latest in communication technology and much like the printing press's beginning days, it can be threatening to both students and teachers in the manner that it makes new demands and changes to expectations associated with traditional models.

Similarly, not all faculty members embrace these new changes, which results in a rejection of web-based instruction. In this study, three faculty members who rejected web-based instruction reported the inability to integrate the use of web-based instruction into their courses as the major delimiting factor. In particular, one faculty member said that he has a computer degree and that he has owned a computer since 1983, but he has "no experience and the knowledge base to know how to take a course from the classroom and put it on the web." In this case, the faculty members believed that they were competent in teaching a traditional class and in using computers for their personal affairs, but they did not know how to teach with the web.

Another factor associated with complexity in using WBI is lack of background in the educational theories. Faculty members reported that in the graduate school, apart from the professors in the education programs, they acquired knowledge in different disciplines, but they did not learn how to communicate those skills to students making it more difficult for them to use WBI. In that case, as a faculty member who has taught for 20 years, but reported to have experienced that problem mentioned, such faculty members understand the technology, but they have a deficient of understanding how to apply it in teaching mainly because "they do not have a background on educational theory or on students' evaluation." As a result, the faculty members recommended the instructors to be consulting with faculty members before conducting the training to identify the faculty members' goals for attending the training in order to address them during the training session other than having a general training for all faculty members.

This research study also revealed that the implementation of web-based instruction mainly occurred from the one-on-one collaboration among faculty members or between the faculty members and skilled graduate students. Faculty members reported this collaboration to be suitable to them because they (faculty members) asked what they wanted to learn and they learned the skills that related to their area of specialty. In addition, they got this support at their most convenient time and in their own offices. Specifically, one faculty member expressed,

> I think the reason [for adopting WBI] is having a graduate student support. I think one-on-one, to be able to sit down and say this is exactly what I want to learn. This is what I need you to show me how to do. Being able to tailor it to my needs specifically for the course I need, to brainstorm with somebody else was critical. So to sit at my computer and say show me what I need to do, let me try it and then let me ask questions if there is anything I don't understand.

The faculty members also appreciated the support from skilled graduate students because they did not speak the jargon used by instructors during the seminars and workshops as mentioned by four faculty members who participated in this study, but these students used simple language that faculty members could understand. For instance, one of these faculty members said,

> The big thing is that it [use of WBI] is being explained to me in a very simple language without the technical language and that has built a lot of confidence in me… It is not long technological responses, it is just how to make the web do what we want it to do and I think that is what, some of us who are not technologically gifted, we just need to know.

As such, when the graduate students or the faculty members explained the use of WBI in a language that the faculty members understood, it influenced their decision to adopt or reject web-based instruction. This research study revealed a positive influence of that support especially from the skilled graduate students because out of the seven faculty members who reported to have received that support six of them had adopted WBI and one was willing to adopt it. She actually reported to have been working on her course web site at the time of the interviews and she was planning to use WBI in the following quarter.

Conclusion

In brief, how faculty members perceived WBI affected their decision to adopt it in their teaching activities. If they found WBI consistent with their values and beliefs of what effective teaching is, with their past experiences, and with their instructional needs, they tended to adopt; otherwise there was a high possibility of rejecting it. On the other hand, when faculty members found it difficult to understand and use WBI, they mostly withdrew from adopting it. Furthermore, faculty member who adopted WBI were able to articulate the relative advantages of using WBI over traditional instruction, such as, simplifying distribution of course materials to students, communicating with students between class sessions, engaging students in preparation in advance of class, and giving more students an opportunity to participate in class discussions.

Implication

The findings from this study supports that, more and more faculty members are using web-based instruction as part of whole courses for traditional or for distance courses. As such, although the faculty members have accessible hardware, training, and discipline-specific media, the current research shows discomfort among most faculty members in the way instructors conduct training for web-based instruction. As a result, there should be more emphasis on the need analysis before launching any training program. That is, need analysis could focus on the faculty members' learning styles; the faculty members' goals and views of effective teaching; the most appropriate time in terms of the quarters, days and times of the day for the scheduling of the training sessions as well as the faculty members' prior knowledge about web-based instruction. Also, the faculty members need more time to learn, develop and implement web-based instruction which could be made available to them through release time, course buy ups, and providing monetary incentives in case faculty members decide to develop their course web sites during their vacation.

Likewise, the information gathered from this study shows that all faculty members using web-based instruction had experienced relative advantages in their teaching process, but it requires time and effort on the side of faculty members. As a result, faculty members need to be ready to spend time in the beginning when learning, developing, and implementing course web sites if they want to save time at the long run. Besides, collaboration with their colleagues as they develop and use web-based instruction is vital in adopting WBI.

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