

## American Medical Informatics Association Nursing Informatics History project

### Purpose

The overall purpose of the Nursing Informatics History Project is to document and preserve the history of nursing informatics.

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**Diane Skiba**

Interviewer: What is your name?

Diane Skiba: My name is Diane Skiba, S-k-i-b-a, and my title is Professor.

Interviewer: At?

Diane Skiba: University of Colorado at Denver in Health Sciences Center.

Interviewer: How did you get involved in this field?

Diane Skiba: I got involved in nursing when I was a graduate student. I was a statistics tutor, and many of my students were nurses. They were actually nursing faculty at the University of Virginia. And as I worked with them, I became familiar with some of the projects that they were on, and I was hired to work for a nurse researcher and be the statistician on a bed sore grant. Unfortunately, she became ill, and the next thing I know I was teaching research classes, teaching nursing classes in research, and working with all of their master's students on their research projects. So that was my entrée.

Interviewer: When was that?

Diane Skiba: That was in the mid 70's.

Interviewer: Was there a moment when the value dawned on you?

Diane Skiba: In 1979, I finished my dissertation, and I got an Apple Computer, an Apple 2E for a present for finishing my dissertation. And as I got this computer, I started to look into the literature as to how it might be used beyond word processing. And I found some

references in the literature in nursing and health care about technology, and ended up coming to SCAMC, which is now AMIA, but it was called the Symposium on Computer Application in Medical Care. And that's where I met this network and people who were doing wonderful things with the computers. And I remember going back—I worked at Boston University at the time—going back saying, 'We have to have computers in the curriculum. We've got to begin to teach nursing this.' And, of course, all the nursing faculty said, 'No, they don't really need to know computing. They'll never use computers.'

So a very wise academician sat down and she said, 'The only way to get people to do curriculum change is to really show them and document to them that this is important. So she advised me to hold a conference, and to put together a conference which we did. We needed a hundred people to break-even, and we had 365 who attended this conference in 1982. And it was really based on who I met at SCAMC. And they came and they did their presentation, and it convinced the faculty that this was not just a fad, and that this was truly something we needed to do in our curricula.

Interviewer: What was the timeframe? What was it called?

Diane Skiba: The... that conference was called Computer Applications in Nursing, and it was in 1982. And as soon as we finished the conference, I put into the curriculum committee that we should have a course called Computers in Nursing.

Interviewer: What university was that at?

Diane Skiba: That was at Boston University

Interviewer: What do you see at your major contribution?

Diane Skiba: I think I, along with others, have really helped to craft the discipline of informatics from an educational perspective. Judy Ronald, who is one of my mentors, really helped in shaping what it was and how we need to evolve in terms of informatics. You know, when we first started teaching about computers, there weren't a lot of applications. There weren't a lot of computers. There weren't a lot of things that you could teach. So we sort of taught data management, and we taught things like programming. I mean, when I think back of what we were teaching nursing that we thought was important, but at that time and at that place that's what was needed. And I think Judy, as well as many other educators, have really shaped the curriculums over time, looked at the emerging technologies, and really created a field, and have moved that field.

Judy Ronald and I wrote guidelines back in 1988 on integrating computers into a class. And I feel that that really was one of those turning points in getting people to think about computers in nursing, which eventually evolved to informatics, into the curriculum, and why it was important, and, you know, what people needed to do.

I think I've also been an organization person. I've looked back at things and thought, you know... when I came to SCAMC, I immediately got involved with a special interest group. I was the secretary, along with Roy Simpson, who was the treasurer, but I don't... he really didn't do much as a treasurer, because I kept all the money. But we really helped to build a momentum to start to create that critical mass, not only by educating people, but by bringing them into professional organizations, getting them involved in the movement, looking at creating policy. And I think about these organizations, like the National League for Nursing had an organization that started in 1985 that was on a taskforce on Computer Applications in Healthcare. ANA had its taskforce. We got the scope of practice from that. So I've been consistently involved over these last 20-something years in organizations to really foster that movement.

In terms of actual informatics kinds of areas, I got involved early on with community networks, and using the technology to really connect consumers to healthcare providers. Sue Sparks who was at the National Library of Medicine did a talk early on about electronic support groups and their value, and this is pre Web. And we just kind of hooked into that, and really started to study computer-mediated communication, and what impact it would have on the relationship between the patient and the provider when you took out the face-to-face component, and how would you manage to still form relationships, to really be a patient advocate, to really help guide a patient in their decision-making process when you start to eliminate things like the physicality of things.

So I think those are some of the achievements that I've seen.

Interviewer: Who were some folks that you've enjoyed collaborating with...?

Diane Skiba: Well, Judy Ronald was the first nurse that I had met at SCAMC that had actually been teaching a course since 1976 on computers. Judy originally worked for IBM and then came back and became a nurse. So what she brought is that computer science piece, and that integration of what was out there in the corporate world in computers to then the healthcare profession. And her course really was an eye-opener for me, really got me thinking about what we needed to do in nursing, and how to help nurses to really, at that time, manage their data. Being a statistician, you're always thinking about data, and she helped me to broaden that out and think about data in a clinical context, not just a research context.

Virginia Saba—without her, none of us would be here. I mean, Virginia was really someone who was ground-breaking. I mean, she pushed and pushed to get us, and open doors, and to really begin that critical mass. Without her knocking on SCAMC's door and saying nursing needs to be involved, we wouldn't be here, and we wouldn't be here in such strong numbers.

Sue Sparks was an early collaborator, because, again, she and I live in the virtual world. She and I experimented a lot in electronic bulletin boards, and a lot of things pre Web, and that was very influential.

I do think that the people who were here in the beginning of SCAMC, you could see their legacy. You know, I can think back to that first meeting that I came, and there were four presentations that... four panels that they did. And Judy Ronald really headed up the education piece, and she was very influential. Roy Simpson was here talking about administrative applications. Kathleen McCormick, I remember coined the phrase 'data cemeteries.' She was very much into research, and, you know, talking about the fact that nursing had data cemeteries because they didn't know how to access their data, they didn't know how to analyze it and turn it into the information that they needed to make better decisions.

There was also Maryanne Schreiber who was here from Hewlett Packard. She was one of the first nurses that was hired by a vendor to really help them shape tools that were applicable to nursing. And she helped us tremendous with starting a pilot program. Once we got permission to offer a course, we offered a pilot for two nurses to start, back in 1984, to start a program on Computers in Nursing. And although it wasn't officially called a specialty, those were our two pilot pieces. Maryanne hired one of our students to do her practicum, and that student continued to work for HP, actually designed one of their products, the CareView System—it has a patent—all from that experience that she had, with Maryanne kind of breaking ground by getting a nurse... being a nurse with a vendor, and now bringing and mentoring another nurse to come into the folds.

The other student we had in that program was Jeannette Polichek, and she has moved on to becoming a chief information officer. She graduated from our program and went on to Stanford, and really was a strong collaborator with medical informatics. And that's

continued to be her roll. The other student was Barb Paginelli, who worked for the longest time with Hewlett Packard, and as I said, developed the Careview System.

You know, those people really helped to shape. They laid the groundwork. They kind of gave you the ideas and said, 'Okay, here's some areas that you could go into, you know, and here's who's willing to work with whom.' It was a very collaborative environment that was formed. It was also my first thing with Patti Brennan, who very much impressed me because she did a very sophisticated statistical analysis, which was not usual for nurses. And she was very comfortable with doing the analysis. And she really led the way in decision support, and thinking through that, particularly from a consumer's perspective. You know, and now you kind of see the applications happening, and you say, 'Oh, here's where the seeds, this is where it all happened.'

Interviewer: Are you surprised by how nursing informatics has evolved?

Diane Skiba: I don't think I'm surprised, but I do see that we followed sort of the different trends, and as technology emerged and as different things have happened, nursing has really either led the pack or, you know, certainly been right alongside where those emerging technologies have come. I think when we look back at the early SCAMC's we were very focused on data management. We were really thinking about how do you capture data? How do you really collect it? How do you begin to manage that data in some form? And then as we evolved with SCAMC, we started getting into the more information science piece, and as more medical librarians and all... and other informatics scientists started coming, you started to think about, 'Okay, now that we've got this data, now that we're turning it into information, how do we begin to use it?' And then we ran into little snags. And, you know, Harriet Werley was certainly a leader in this, thinking about this for many years ago, is that we didn't have a way to codify that data, and if we wanted to turn it into information, we needed to have terminology. And you saw sort of the profession moving in that way, you saw medical informatics, nursing informatics being influenced

by that change. And now you sort of see everybody's talking knowledge management, people are talking about, 'Okay, we've collected this data, we've analyze this data, we've taken this information, we're now using it, how does it guide knowledge? How does it really help us with evidence-based practice?' So you see that evolution.

You also see that we've done things and had projects that have used the emerging technologies. You know, I think back about our work with the electronic bulletin boards and Sue Sparks, and then Patti Brennan evolved into using it in her computer linked projects, and, you know, now people are talking using smart technologies, and having smart homes for elderly patients. Nursing has always been on that forefront of saying, 'How could we make this more useful?' And our focus has always been to do with for the patient.

Interviewer: What do you like most about working with nurses?

Diane Skiba: I think nursing is a very rich environment. And as a statistician, you saw a lot of things that they could do with their data. You know, they live in this very complex environment, and there are so many interactions, and there so many things that you need to look at to say, 'Well, what really constitutes really good nursing care?' And, you know, as I've worked with the computers, and as I've taught many students, and, and everything, I've always been fascinated by that rich environment, and how to really do research in that environment, to capture that data, and to really portray that data of what is it that nursing does so well.

Interviewer: Any core philosophy, core vision that's kind of threaded through your career?

Diane Skiba: You know, when I first got involved with computers, there was an advertisement that stuck with me, and it was talking about the fact that technology should really augment human intellect. And it's been sort of a guiding principal that I've always tried to profess

to the students to say, ‘Think about it not from, oh, this is a new toy, or a new gadget, or a new thing that we could have, but how does that augment the human intellect, how does it help the human spirit?’ When we were doing work with the computer-mediated communication and the electronic bulletin board, we got to see how this technology nourished the human spirit. We got to talk to cerebral palsy patients who didn’t have any contact with outside world except through their electronic network everyday. Some days we were the only human contact that they had. And I’ve always tried to say think about this not as the technology being foreground. The technology is the background that helps us to really nourish that intellect and that human spirit.

Mark Wisner, who was a computer scientist, talked a lot about ubiquitous computing, and how computing should be background, it should become the fabric, but it should not be something that gets in the way of the human. And I’ve spent a lot of time in teaching students that, yes, you come from a caring profession, yes, your interest is in humans, and then when you add technology to it, it shouldn’t be technology in the forefront, it should be technology in the background. You can still focus on that human aspect, and that that should be your goal, really taking and looking at how does that tool really augment and support your practice and your patients?

Interviewer: What are you currently involved in?

Diane Skiba: A lot of what we learned from our experience with computer media and communication was about setting up networks, helping to connect people with each other, and, and really thinking about this virtual environment, and what it worked best with and what it didn’t work. The Learning Collaboratory and the I-Collaboratory that we call it now, for Informatics Collaboratory, is really a project about educating students within a learning environment that allows them to network and connect with each other, as well as to informatics specialists. Our program is an online program. We’ve been a totally online program since 1997. And one of the things we noticed in the online environment,

whether we were working with patients or we were working with students, was that if you don't incorporate them into the environment, if you don't create a sense of community, people feel very isolated, people feel as if they're talking just to a computer, and not to people. So the Collaboratory was really our attempt to create this social environment for learning or for practice.

And the current project that we have that were funded through HRSA is to really make that environment transparent for a student, as well as supportive of a student. So students have the opportunity to interact with each other through audio conferencing, video conferencing in the Collaboratory. They can have chat sessions. They can have grip sessions if they want. They do study groups. Twice a month we have web-inars that we allow them to come in and network with informatics specialists about hot topics, or they can also network, once a month we do potential employers. And they come in and they talk with our students about informatics roles, what their companies do, what they look for, how to put your resumes together.

And you've got to imagine that we're talking about 15 time zones here. I have students in Lebanon, Saudi Arabia, Germany, all through the United States, Alaska, and Hawaii. So when we have these web-inars, we are truly bringing together a global community to begin to have the students interact with each other. We've been studying and looking at how do you create a sense of presence in that, how do you educate students in this learning community and have them feel like they have some sense of who you are. We feel that a lot that we're learning from this is going to be very applicable to virtual nursing care. As we look to do more tele-health applications, the nurse is going to have to begin to create a sense of presence with that patient. And most of the nursing literature right now talks about presence only in a physical sense. You know, you can ha... establish a sense of presence with a comatose patient, or with a patient, but it has to have physicality. We're trying to look at the future and say, 'What's going to happen when you're physically not with your patient, when you're interacting with them over their cell

phone, maybe? How do you create that sense of presence and begin that relationship and continue that relationship that's so integral to what nursing is all about?

Interviewer: What do you see in the future of informatics?

Diane Skiba: I think we're really moving into this more virtual mobile world. One of the things we've learned a lot in our online education is that we're dealing with different generations of students, and we're also dealing with different generations of patients. And I think as you look at the upcoming generations, and what they're considering the millennials of the Net Generation, they're digital natives. That's what Marc Prensky calls them. They're digital natives, and he said faculty and some of our nurses, who are over-sporty are real digital immigrants. We've kind of adopted the technology and tried to make it fit. They were born with the technology.

And I think they're going to help to push healthcare using more technology in a variety of different ways. They're very much wanting to get their lab information sent to them as a text message on their cell phone. We sort of haven't quite gotten there. So I think we're going to see more smart tools, more tools that the consumers are going to want to use to make better decisions for themselves. We're going to be a much more mobile environment. They're going to be much more comfortable in a virtual environment. They won't need all of the physical location kinds of things, you know, but they're going to still want to be able to connect with us, but it's going to be in different ways. But I think you'll see smarter, mobile, and smaller.

Interviewer: What does it mean to you to be included in these organizations?

Diane Skiba: Oh, it's, it's, it's always been such an honor to be recognized in a field that really is not my discipline. But I feel like nursing adopted me a long time ago, and they've really nurtured and they've brought me in. And although I don't have a license, I think many

people have really helped me to feel so much a part of this, and they've accepted me to be a nurse in their sense.

Interviewer: What do you enjoy most?

Diane Skiba: Teaching. I love working with the students. I love when they have that 'a-ah' moment, when it all comes together and, and they say, 'Oh, my God. You know, I see what's going on here. I see how to use this information.' And that's the biggest thrill is to... you know, if you can walk up... wake up every day, and interact with a student, and they get that experience, and it comes together for them, then you've done your job.

Interviewer: What kind of work have you done with Roy?

Diane Skiba: You know, Roy, many years ago, tried to figure out what do we need to do to really educate some critical mass, and what was going to be helpful. And he called Judy Ronald and I one day and said, 'What could we do? You know, we don't have a lot of students. We know have a lot of people that know something about informatics. And from a vendor's perspective, I have a lot of people who can't make good decisions about selecting products because they don't have a knowledge base.' And so we said, 'Well, you know, this is what we don't have.' And he said, 'Oh, I can provide that.' So he joined up with Judy Ronald and I, and we did the HBO Nurse Scholars Program. What we did is we selected nurses from the nine different regions in the United States that their company and the American Hospital Association kind of divided the world up in, and we selected educators who we thought we could help be a catalyst for educating other people. We provided them with the necessary tools that they needed. Roy would bring them to the corporate offices for a week, and we would design a program to bet them up to speed of the lifecycle of an information system. We gave them all the curriculum materials that they needed to then incorporate it into classes, to do continuing ed, to maybe work with the hospital staff across the street if they were selecting a system. We

gave them access to computer tools, we gave them at that time floppy disks to take home, with examples of how a clinical system might work. We gave them video tapes. So we really put together a curriculum package that they could work on.

And that program produced many of the people that you see presenting here, and they were the catalyst that kind of got them over things, whether it was to convince a dean that this was important, and to acknowledge that their work that they were doing was important. Sometimes it was just making that network, finding two or three people. Ramona Nelson was one of our early nurse scholars. She connected with two people, and they have a textbook series out that they've been using for the last 20 years, so you get to see the benefits of it. Sue Bakken who's a brilliant researcher, and has been doing so much in terms of moving the informatics research agenda, was one of the nurse scholars. So it was a really, I think, an important time, and it served as a catalyst to move the, the field.

[change tape]

Interviewer:

Diane Skiba:

We have a course that we put in the curriculum in our last revision in 1997 that's called the Human Technology Interface. And we wanted to make this a core course for all students to take to begin to get them to explore the consequences of technology. And we look at technology very broadly in this course. It moves beyond just information technology, gets into biotechnology, nanotechnology, looking at neuro cognitive technologies, and how all of these are going to influence human performance, and how they're going to impact them as a nurse, how it impacts their patients, how it impacts healthcare delivery and society. And in that course, we have them go through a series of exercises, and one exercise they have to do is that they're interviewing for an advanced practice role in a very future-oriented healthcare organization, and in that interview, they

have to talk about how would they use technologies to augment and support their advanced practice, how will they adapt their practice to accommodate the Net Generation and the numerous emerging technologies that are coming into play, and how will they deal with the human computer interface issues, and what would be their recommendations that they would make to this company.

We also have them working in teams to analyze. Each semester they take different projects to look at. This year, they're looking at population genomics, and looking at the influence of technologies, and the development of biotechnologies in race and medicine. They're also looking at smart homes, looking at what happens when you put RFID tags and sensors and all kinds of things in patients' homes. And it's been a fascinating class to teach because it always changes. It's very much what's going on. The students sometimes don't get it when they're in the class, but we get comments when they go out to the working world and they come back and they'll say, 'I didn't realize how much this was really occurring in healthcare, and how better positioned I am to look at both the positive, negative, and unintended consequences of technology. And it's been a real strength of our program, in that we've really tried to incorporate that. And I think a lot of it has been our experience with informatics and looking at that broader picture, and a lot with our work with vendors and our programs that we have.

We have a partnership with McKesson, which used to be HBO, which is with Roy with the HBO Scholars, and everything. And McKesson has formed a partnership to really work with us, not only with our informatics students, and to really move and advance the field of informatics, but to work with us with our generic students, our baccalaureate students in introducing them to technology. We have them working with our doctoral students on nursing research ideas. This partnership has allowed us to really bring informatics to life. Our students in the Human Technology Interface class participate in usability studies. So they might get on and a product might be coming out from McKesson that looks at maybe using a PDA in a home environment. And so our students

don't just think about human computer interface issues. They're part of a usability study. They feel like they're making an impact because they're giving information.

We have internships with McKesson, so our students get to work on projects. They have provided us with access to many of their clinical systems, so the students get some experience with it. And our newest project is that we are doing through video conferencing and through our Virtual Research Collaboratory we're working with hospital and nurse administrators to help them with their data analysis and look at outcomes research by connecting our doctoral students that may be anywhere in the U.S. with a hospital that we're working with right now in Decatur. And it's allowed us that opportunity to do collaborative work without physically being together.

Interviewer: Talk about recruitment.

Diane Skiba: I think the most important thing when we're recruiting students to come into the field of informatics is to ensure that they're coming to informatics to make sure they want to make nursing better. We do a lot of talking with students when we recruit them to filter out those who want to leave nursing to those that want to continue in nursing but maybe expand their horizons, and look at how might informatics help them become a better nurse. I think it's really important for us to stress the fact that nursing is really at that nexus between people and technology, and that, that informatics is there. And that what you're going to do in informatics is really connecting people to technology, whether that's connecting it to the nurse or connecting it with the patient. But, first and foremost, you're the clinician that understands that process, not just in the technology piece, and not just the informatics piece, but you understand the clinical situation you're in, whether it's caring for a patient in a tele-health environment. Whether it's helping to implement CPOE in dealing with healthcare professionals, you are still first and foremost that clinician.

End of Interview