

Assessing the Impact of IAIMS on the UMDNJ “Information Workspace”

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Survey Background

- The UMDNJ IAIMS team and independent contractors worked together to evaluate the impact of IAIMS initiatives on the “information workspace” (IW) of the University.
- The IW is the informal name for the complex facilitative and collaborative environment including computers, networks, access to specific UMDNJ resources, patient records, the Internet and innovative teaching tools that were intended to affect almost every aspect of University operations.

Survey Methods

- Qualitative methods (focus groups, telephone interviews) identified salient aspects of the IW for individuals with specified roles (clinical, teaching, research, student, administrator) and commonalities in impacts.
- This informed an online survey with 21 questions common to all roles and 6 to 8 questions for each role.

Survey Questions and Analysis

- Open-ended (text box) questions sought overall positive and negative experiences with the IW, and positive experiences associated with each role.
- Quantitative results were analyzed using SPSS.
- Over 2,000 textual response were analyzed to develop a coding scheme classifying types of impact, as reported by the users.

Overall Results

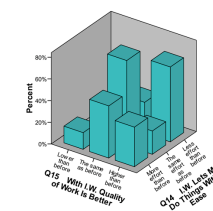
Overall, this survey and the analysis establish that:

- The IW has **substantial positive impacts**, and is viewed, generally, in a positive light. It contributes to higher levels of collaboration, and to improvements in both the quality and quantity of work products, and processes.
- Impacts of the IAIMS Information Workspace are far-reaching and diverse, they can be measured by a web-based survey, whose questions were developed by interviewing representative respondents.
- The impacts are generally positive, on both the **efficiency and the effectiveness** of activities of Clinicians, Researchers, Teachers, Students and Administrators.
- The next most strongly measurable impacts are in various aspects of **access to information**.
- There are strong positive impacts on **collaboration**, which are measurable by scale-type questions, and which are the primary theme in open-ended responses provided by a wide range of respondents.

Quality and Effort of Work

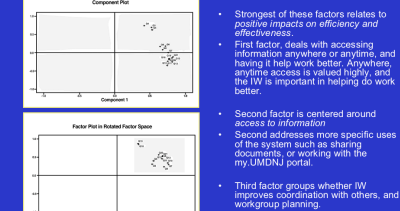
- While there is no single “bottom line” for assessing the impact of new systems on an organization, it is very informative to look at the impact of the information workspace on the effort required to produce work, and on the quality of that work. As the following results show, the impact is dramatic and positive.
- 37.8% report quality of their work has improved, and that it takes less effort.
- 15% report effort is down, while quality is holding steady.
- 7.6% report that quality has improved while effort has held steady.
- Combined 61% thus report that either effort has improved, or quality has improved, or both (as shown in the next panel).
- 11.2% report that quality or effort, or both, has become worse. (Respondents = 526)

Cross-Tabulation: IW Lets me do things with more ease by With IW. Quality of Work is Better.



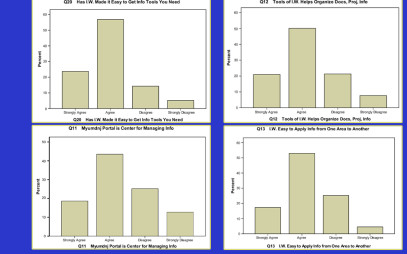
Quality and Effort of Work: A combined 61% report that either effort has improved, or quality has improved, or both. (Respondents=526)

Factor Analysis



- Strongest of these factors relates to positive impacts on efficiency and effectiveness.
- First factor deals with accessing information anywhere or anytime, and having it help work better. Anywhere, anytime access is valued highly, and the IW is important in helping do work better.
- Second factor is centered around access to information.
- Second addresses more specific uses of the system such as sharing documents, or working with the my.UMDNJ portal.
- Third factor groups whether IW improves coordination with others, and workgroup planning.

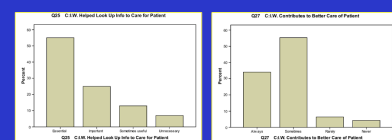
Areas for Improvement (Second Factor)



Areas for Improvement

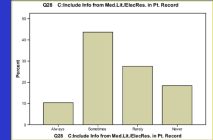
- The second factor (conceptually focused on specific uses of the system) Questions ranked in decreasingly positive responses. Information of this type can be useful in system management, as it may highlight areas for improvement.
- Q20: Has I.W. Made it Easy to Get Information Tools You Need (R=561)
- Q12: Tools of IW Help Organize Documents, Projects, Information (R=549)
- Q8: I.W. Helpful in Sharing Documents Outside UMDNJ (R=466)
- Q13: I.W. Easy to Apply Information from One Area to Another (R=508)
- Q11: my.UMDNJ Portal is Center for Managing Information (R=628)
- There is a strong positive assessment across all characteristics. However, corresponding services are not as effective as might be.
- Going forward focus even more attention on improving constituents' ability to find, organize, share and manage information through the IW and increase the use of the my.UMDNJ portal as a natural center for managing information.
- As IW permeates the workspace, individuals become adept at piecing it together, arriving at idiosyncratic solutions involving web pages, external services, etc. While many of these ad hoc solutions cannot be effective under the restrictions imposed by HIPAA, it may be some time before there are uniform solutions valued across all institution as complex as UMDNJ.

Clinicians



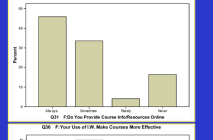
- 80% see the IW contributing to patient care because they can look up resources. 55% indicate that the IW is an essential resource to look up information for patient care, an additional 25% found it to be important. (Respondents=100)
- 89% report that the IW always or sometimes contributes to better care of the patient. (R=94)

Clinicians



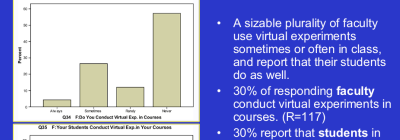
- 44% indicate they sometimes include information from various external resources and the medical literature in the patient record.
- Only 10% indicate that they “always” do it.
- There are philosophical differences among clinicians as to whether, in their roles as teachers, they should encourage or discourage the students to “seek answers in the literature”. (R=87)

Faculty



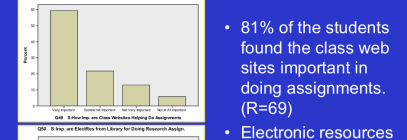
- 79.5% faculty provide information online (R=122)
- 79% believe that the IW makes the courses more effective. About equally divided between regarding the impact as moderate and regarding it as substantial. (R=105)

Faculty



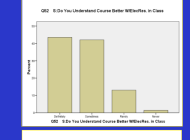
- A sizable plurality of faculty use virtual experiments sometimes or often in class, and report that their students do as well.
- 30% of responding faculty conduct virtual experiments in courses. (R=117)
- 30% report that students in their classes make use of virtual experiments, always or sometimes. (R=104)

Students



- 81% of the students found the class web sites important in doing assignments. (R=69)
- Electronic resources from the library are judged very important by 85%. (R=71)

Students



- 85% of the students report that they understand materials better using electronic resources. (R=69)
- 84% report they remember materials better when electronic resources are used in class. (R=68)

Researchers

I.W. useful or important for the following tasks:	Percentage
Acquiring Data	74.1%
Proposed Submission	69.5%
Manipulating Data	65.9%
Analyzing Data	61.9%
Dissemination	55.0%
IRB Applications	67.5%
Subcontract Preparation	54.7%

- Three-quarters of researchers find the IW useful for acquiring large data sets. (R=65)
- 70% find the IW very or somewhat useful in grant preparation. (R=82)
- 66% find the IW useful for manipulating large data sets. (R=82)
- 62% find the IW useful in analyzing large data sets. (R=84)
- 56% find the IW useful in disseminating large data sets. (R=76)
- Two-thirds find the IW useful in IRB preparation. (R=83)
- Just over half find the IW useful in subcontract preparation. (R=53)

Quantitative Methods/Sample

- April and May 2007
- University's email system, all member of the community having an email address
- Access the survey through the Web portal
- Informed consent, and other procedures which all combined to reduce the response rate
- The final response, a total of some 650 (the number of respondents varies with the question) usable responses out of a population of 19,786
- Represents 3.3% penetration
- For a variety of reasons, it was not a random sample of the UMDNJ population.

Qualitative Methods

- Taxonomy of codes/themes to analyze 1580 open-ended responses
- Responses ranged from nothing to entire paragraphs of text.
- Summarize texts. Defined “question-specific” categories by looking for “key” words and phrases that occurred consistently in many answers. From these developed codes, and assigned one to four codes to each response.
- Defined 40 categories. Created logical arrangement, and clustered themes as they conceptually created larger categories. Second stage focused on broadly classifying the main impacts of the IW and the larger logical framework which subsumes these themes.

Analysis of Qualitative Responses: Coding

Qualitative Categories. Numbers may not sum to 100% due to rounding.	Number of Codes	Percentage of Codes
A. Collaboration	1249	32%
B. Process (operationalized)	486	13%
C. Product (operationalized)	43	1%
Total	1778	100%

Qualitative Findings

- Collaboration – 61% focusing on collaboration as product or process
- IW impact on collaboration products – 21% “sharing files within UMDNJ”, “coordinating tasks and projects with others”, “communicating”, “interaction of files outside UMDNJ”, “using “browser””, and “making use of online information repositories” as products of collaboration. When IW functioning well “products” can be produced with efficiency.
- IW impact on collaborative processes – 46% “saves time” (41%) and “helps with tasks” (11%) and the responses collected for great convenience (36%). However, about 13% of responses focused on IT problems and how “connectivity issues” (6%), “limitations of system” (7%), “restrictions on access” (5%), and other IT issues are impediments to productivity.
- IW impact on internal processes and collaboration – 30% “finding information” (23%) and “increasing the UMDNJ system anytime and anywhere” (4%), “finding disciplinary information” (6%). Ease of finding online information such as journals, databases, internal IRB or financial data, articles on treatment options or research protocols. Access is greatly helped by regular, if not daily, use, saving effort and time, in not having to physically go to the location the resources were housed.
- Some 43 comments (27%) addressed external products – focused on patient care and ways IW helped with finding information for better patient care. Expressed by 80% of clinicians viewing IW as contributing to patient care in Q25 also because they can look up resources. IW helped publication of results and distribution of findings, coordination with co-authors, with preparation of manuscripts, with submission of articles and with posting of research results online.
- Overall, the strong assessment and “beyond the scope” IW infrastructure more positive impact. When “need not wait for others to complete a task, for others to provide information (e.g. payroll), processes are more efficient. When need not wait access to a physical building to get to resources (such as a library) or have to struggle with awkward interfaces, or seek for help with technical glitches or fees, the physical and mental effort of working is diminished. When it works well, the IW is seen as facilitating collaboration efforts and internal processes and contributing to better products.

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