

Identifying and Providing Psychological Counselling to Students Through Technological Internet of Behaviour

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ABSTRACT

Counselling is a soothing technique for mankind, who are disturbed by environmental pressures and disturbances, psychological guidance is needed in daily life. Technology, along with artificial intelligence and the Internet of Behaviour, supports counselling practitioners in identifying the patient's behaviour and providing their service accordingly. In this paper, the scenario is discussed. Technology-supported service is recommended for the better service.

Introduction Human behaviour is not standard. It changes from time to time. Initially, childhood behavior changes when a person turns into an adolescent. Thinking, activity, and speech all change. The person's liking changes. A person in normal condition behaves differently. When a person is sick or ill, the way of behavior changes.

When a human gets connected with society and gets social exposure his or her behavior changes, while a person's status changes due to education or a better career, generally there is a change of character. The study of human character is psychology, there are different types of human psychology, and biopsychology analyzes the interactions between neurotransmitters and behaving attribute analysts. Clinical psychology is the process of treating anxiety, depression, and other mental disorders. The psychologists will undergo training to provide the treatment to the patients. Cognitive psychology offers counseling services for mental health development, and motivating speech, by that mental health development. Related to Cognitive psychology counseling psychology is used to relieve stress and anxiety among users. The counseling will provide support to the user, to improve the mental quality emphatical the mode of understanding the person, and provide a service to improve mental stamina to overcome stress and agony.[1][2]

Apart from mind-oriented psychology, another psychosocial-oriented psychological approach of psychological service is provided in the form of developmental psychology to an office person, it is used to improve the user's skills, and this psychology will identify the client's skills both positive part and negative. This mode of counseling will help develop the inherent skills of the clients. Educational psychology is provided to every student studying in school. Education-oriented counseling will use students to identify their educational career apart from the educational career through this educational psychology stress of the students are relived while they are writing exams.

Experimental psychology is the mode of psychology patterns implied over the patients who are near it. Mostly this psychology approach is applied to people with chronic medical

disorder. Different modes of approaches are made to improve the mental of the needy. Forensic psychology is a service provided to a person who fears criminal activity or court proceedings. This approach in another mode used to read the criminal person and know their motive for the crime. The psychology is based on legal issues and criminal behavior, proceedings of court proceedings, and law enforcement, the outcome of this psychology of the criminal and behavior is observed, this psychology is based on industrial organizational psychology, it is the behavior of workers in the working area, the worker's behavior, change of characters of the workers in the various working condition, normally a psychology counseling is provided to the workers to relieve from work pressure.

Psychology of a personality analysis of an individual, each personality has its personality traits, and they have behavior changes. Based on the environment and situation the psychological outcome changes. Psychology is based on the social behavior of the individuals in the social environment, person behavior changes from environment to environment. For example, an individual behaves better in the homely condition. But when it comes to the social environment it changes, it can be considered as an office where there is a huge change in his behavior. The same person being in the party mode his mode of activity changes. In the friend club, his attitude and way of action change. These every things defined by social psychology.[3]

Sports personalities have different modes of psychology, they possess dedicated-oriented psychology, fighting to win the game or situation, and they need counseling based on it. To understand them it is different, they perform the physical activity they mostly optimistically place their minds, By that they achieve anything in their sports.

The change in the psychology of humans is inevitable now as there is a change in social change. Society is changing period after period. Emotional intelligence is the skill of understanding the human character or the behavior of the person. Normally psychologists will be mastering the skill of emotional intelligence. In another mode not only understanding, it is the ability to realize the emotions stress and emotions of the client. Emotional intelligence possesses four components, they are Introspection, self-regulation, motivation, and empathy. Here Introspection is the ability to understand one person's self, it possesses various abilities similar to recognizing a person self pros or cons of a person the individuality. There are two types of introspection public introspection and private introspection.[4]

Public introspection is the nature of thinking about the public, social-based awareness appearance of a self in public. The individual with this trait will be well aware of the public surroundings the person travels This trait will provide awareness about the opponent being accomplished with them. The private introspection will be awareness of the self, knowing about the self, and how the individual will react to different situations and conditions. This will provide knowledge to the self, the pros and cons of the self.

Self-regulation is the control a person possesses the psychiatrist should be self-regulatory understanding the condition and act accordingly. Motivation is a part of psychiatrists, most of the clients they face require motivation, to come from their situation. The motivated psychiatrist can heal the under-motivated clients. Motivation is different types one is the thing one can make to act to do a job. Motivation can understood as two modes intrinsic motivation and extrinsic motivation. In intrinsic motivation, one can be self-motivated with the situation condition within himself. But extrinsic motivation is motivated by the external forces that tend to motivate them with conditions. The last component of the skill is empathy, this skill unique skill to be practiced and mastered by everyone to avoid conflicts in our surroundings. This skill is approaching the problem from the opponent's end. What the opponent will think.. approaching the problem from

the other end of the problem. This will provide a better solution. There are three types of empathy are their affective empathy, somatic empathy, and cognitive empathy, these are the three different levels of empathy initially affective empathy is the feeling of other problems such as information and knowledge, this mode is to feel the joy or sorrow of others from your side. The next stage somatic empathy is the feeling of emotion in a physical manner, assuming and reacting to the feeling in physical mode. The third stage is a higher level of understanding of the mental state of others and responding to the state and solving the problem, which is cognitive empathy, it state observed by a psychologist while approaching their clients. [5]

To support the phycologist's technology is coined to make a handy device and review provide suggestions, human communications are recorded, and communications are made through the internet medium. All the communications are recorded impact of the communications can be realized, backend meaning of the communication is understood through communication. The technology Internet of Things

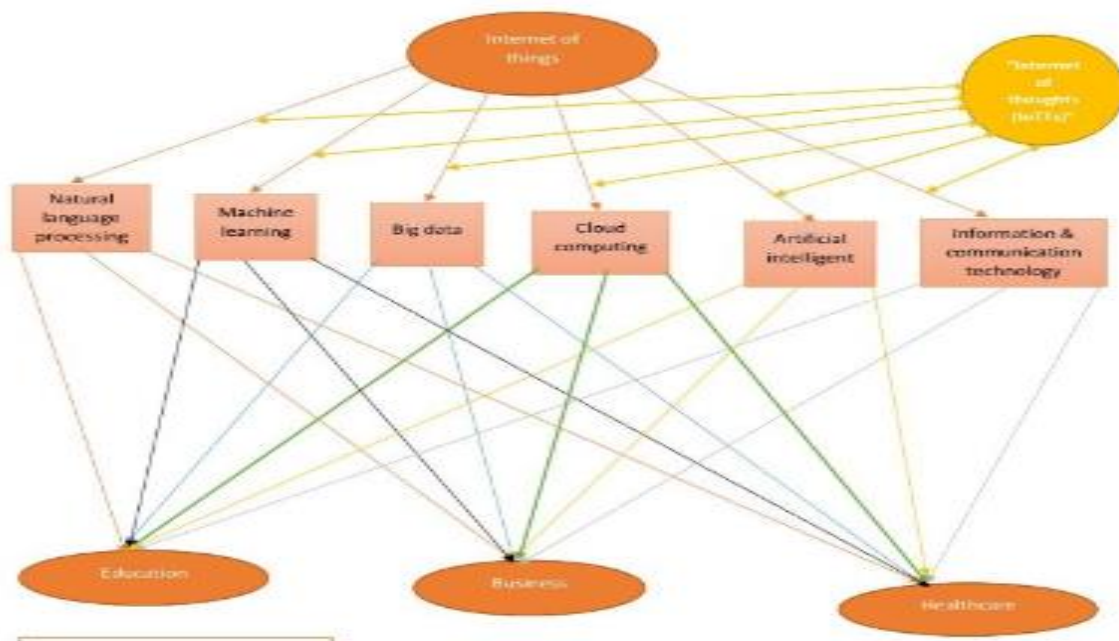


Fig:1 Applications of Internet of Things in various domains

Recent tools that modern people possess have an impact on human psychology, the tools impact the person, On the other end, people's minds and behaviors can be tracked through the internet or various devices. In general, news can create hypertension in humans. Even fake roamers create panic in the human mindset. Their reactions tend to change due to these effects. These modern-day tools support in education of students in acquiring the education materials and so on, but the same technology diverts the students from the education also, mostly they are diverted to the gaming. For the business person, it is used to identify the customer's mindset based on their feedback. While customers purchase the product online each customer buying features are recorded and stored based on the customer's feedback quality products are recommended.

Even patients can identify the cause of their illness through the Internet of Things. The data regarding illness is stored in the common server while patients check for the source of illness, they can get enough knowledge from the Internet of Things the data relevant to illness is stored in the concern server. On the other end, medical practices can access the report of the concerned patients' scan and a medical report from the remote and provide their treatment with a

mode of internet-supported tools. They can review the current situation of the patients and understand the feelings of the patients, prescribe the treatment. Medical practice treatment team from different locations reviews the conditions of the treatment and can forecast the outcome of the treatment. [6]

Connectivity establishment of every device component with the storage and central processing or cloud-based environment will enable a platform to map the behavior of the client entity in advance. The ideology of close monitoring of the entity is mentioned as the Internet of behavior.

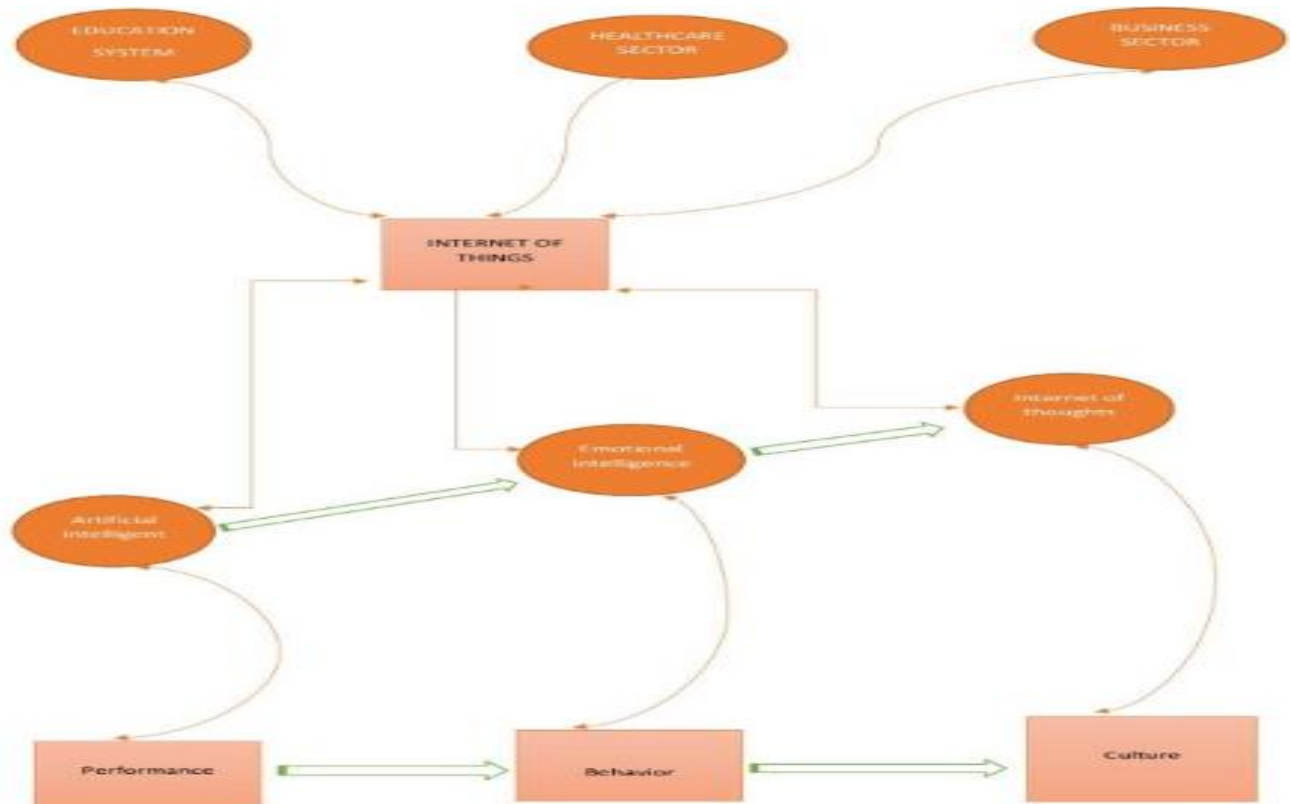


Figure: 2 various source of data for Internet of things

The Internet of Things is a common platform from where with connectivity internet multiple domains establish the service to provide better performance in their domain. To monitor human behaviors Internet of Brains a domain is established as a part of the Internet of Things. This mode of analysis tools will be a handy helpful tool for psychiatrists.

Utilization of the Internet of Brain (IOB) in multi-application Brain activities are traced through a connectivity establishment between a human brain and a computational device, The tracked content is converted into mathematical data and considered for analysis The connectivity establishment between the human brain and computational device is been coined as Brain Computation Interfacing. It is known that the internet of Things is the technology that runs with the support of sensors that detect and collect the signal, which in turn is collected as data, based on the data algorithmic models are applied to make a decision Based on the data, the physiatrist is supported with the data to treat their clients. The Internet of the brain normally interfaces with the human brain the impulse variations are captured, for the various instances of human activity. The brain interface with the devices can be applied in children's education. [7]

Education and Brain Mapping Technique:

In education, especially in special children's education the mapping of the brain with wearable devices is used to monitor the children's development in the concern education. In brain mapping, special children's learning levels are monitored while learning. The brain of the children is mapped with the 15 sensors are being placed in the scalp at various location apart from the scalp multiple wearable devices are fixed with sensor can be fixed in the elbow to monitor pulse ,heartbeat and oxygen that are located to identify the specific functions of humans to monitor the parameters similar to memory, emotional regulation, focus, impulse control, social processing, expressive and receptive language, and more, these character outcome and reflex to the situation is been recorded through sensors.

Based on the sensor outcome a student's various levels of learning parameters are identified based on the level of education provided The parameters that are learned from Brain mapping are Attention level and concentration level, working level memory, and memory in the short instance. Variations in emotion in various instances, Moods variations in anxiety and depression, control over behavior, executive functions, perceptions over visual and spatial perception, social awareness and comprehension and language processing.

Internet of Behaviour and Education: In improve the quality of education, students have different mode of thinking, this can be measured by different mind waves as Alpha, Beta, Gamma, Delta. Alpha waves are active while a person concentrating that will connect conscious and subconscious mind. Students while learning this is possible. Gamma waves will be in active while a person with high alert and in consciousness condition. Beta waves will present in the normal condition, while a person in entailment or in the travel mode. Delta waves will present while human in the sleep mode.[8]

So these waves will impact over students, normally nowadays students possessing the character of hyperactivity ,use mobile phones for various purpose like education ,gaming's and entertainment ,So these waves impact over students in different conditions normally students with alpha waves impacted condition will act in better and their concentration level will be good , while using the students using mobile phone there is change in the waves ,It may be gamma in the high alert condition..

The internet of behaviour is technique with support sensory memory data through sensors the behaviour of the students can be predicted, The IoB technology is been processed though as the model execution displayed below. The process comprised as Track, Collect, Analyze ,Understand and Influence.

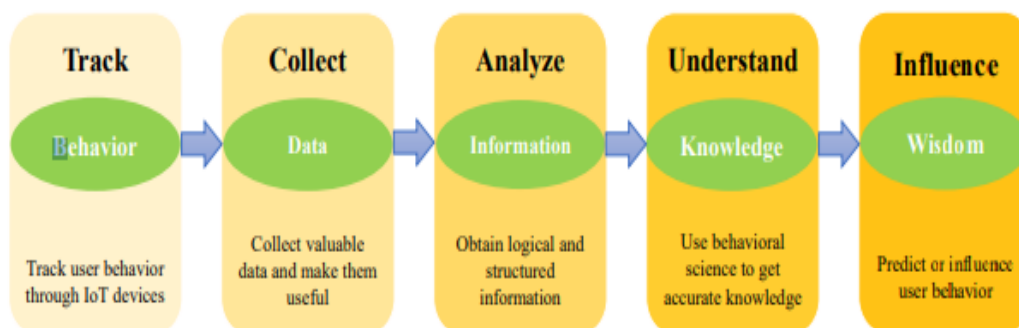


Fig: 3 Process execution of IoB

In education sector this can be implemented here the school students behaviour are tracked students character change due to certain social reasons may be personal or due to external

impacts. Then student data are collected and stored. Considered for the analyse through machine learning algorithms the change of character is mapped ,if there is any change in attitude is met by physiological observers.

Through the data analyses students character change is been identified, the process of analyse takes place based on the block process diagram presented below

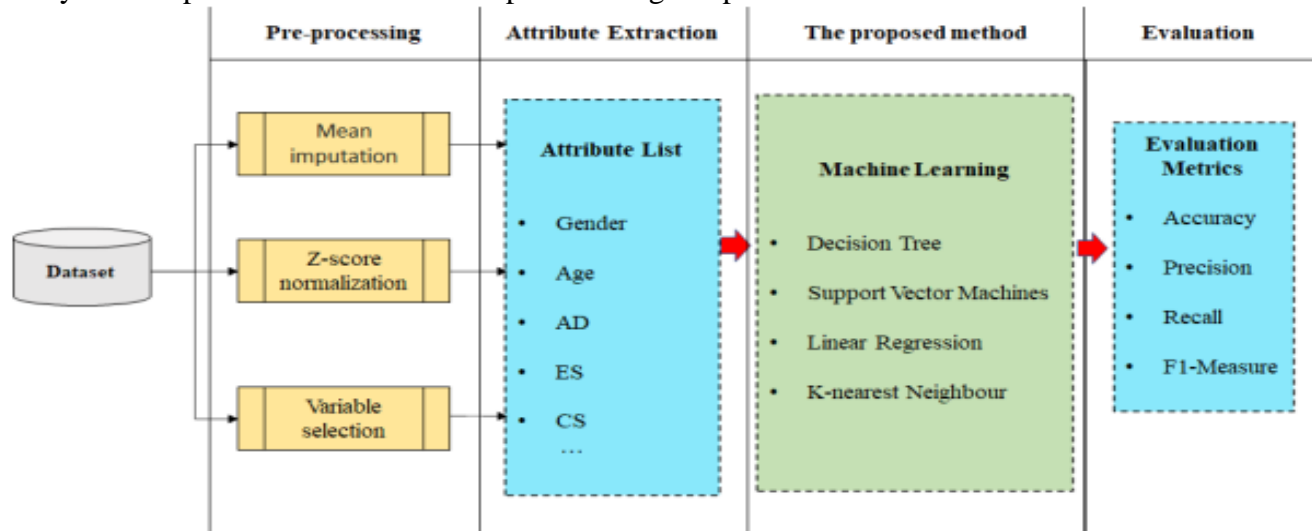


Fig:4 Data analyzes is processed through prerocessing ,Attribute extraction, mutiple machine decision making algorithms then evaluation and decesion making

The outcome of the propoed method leads to evaluation in the evaluation accuracy of the decesion making ,accuracy level is determined by precision level, here recall and f1 measure is employed to proper decesion making over the behavioural change of the student.

Through the result a decision making is possible for a phycologist to handle the student, through the analyses of the various factors that influence the students mind variations, they are cognitive factors present in society and environment , factors that present in their country or in the statehood culture ,education centres they receive their education ,it may vary according to environment ,their school area such as urban and rural, it can observed as clear based on environment of education ,the student education outcome is realized. Other situational and deviation impact the student character change.[10]

Strategic splits play a crucial role in determining a tree's accuracy. It's important to recognize that the criteria for classification and regression trees are distinct. Decision trees employ a range of powerful algorithms to split a node into two or more sub-nodes. This division leads to increased homogeneity in the resulting sub-nodes, significantly enhancing the purity of the nodes in relation to the target variable. By evaluating all available variables, the decision tree effectively identifies the split that produces the most homogeneous sub-nodes. In the decision tree there are two different mechanism are followed, it is meant as classification tree and regression tree, the classification tree will apply a binomial condition check over the data to take the decision ,decision will be taken based on previous data.[13]

The decision tree algorithm executes based on these steps process
Step 1: Start with the entire dataset, which forms the root node known as S. This initial step lays a strong foundation for the decision tree.

Step 2: Deploy attribute selection measures to confidently identify the most impactful attribute for splitting the dataset.

Step 3 with the best attribute determined; divide the root node (S) into subsets based on the various possible values of this attribute, ensuring a thorough exploration of the data.

Step 4 Construct a decision tree node that distinctly represents the best attribute, reinforcing the decision-making framework.

Step 5: Progressively create new decision tree nodes using the subsets from Step 3. This recursive approach continues until you reach nodes that can no longer be split, resulting in robust leaf nodes. This systematic methodology empowers decision trees to produce clear and insightful models for classification and regression, enhancing their effectiveness in driving informed decisions

As a case study the student receiving education in the rural area without any distraction of urban area, has more observing mind and innovative thinking calibre, the lacking thing that is observed as learning aid facility is lacked in the rural area students. The psychological shift change of character is more observed in urban student the reason for this is there are more distraction and deviation of the mind. Change of mind is more often is possible due to various distractions around the student. In thickly populated urban area, provides more inputs to the students in the form of food, apparels, entertainment and so on.[14]

Conclusion: Based on the results phycologists can get aid through technology to deal with their clients, they may get assist from technology. It supports with better decision making in solving in critical physiological problem in the critical cases. The technology is extended with the wearable devices to monitor the brain activity of the human in the need of care. In future enhancement chip engraved with human body to monitor the hormonal variations in multiple situations which will provide better suggestions to treat the conditions.

References

- [1] 12 Types of Psychology: From Biopsychology to Sports Psychology | University of North Dakota
- [2] Empathy: Definition, Types, and Tips for Practicing
- [3] Krishna Reddy, Christ College Bangalore, Psychological patterns of human behavior
- [4] Benjamin M.P. Cuff, Sarah J. Brown, Laura Taylor, and Douglas J. Howat Coventry University Empathy: A Review of the Concept
- [5]<https://modern diplomacy.eu/2021/06/16/internet-of-behavior-iob-and-its-influence-on-human-behavioral-psychology/>
- [6]P. M.Mah1,*, I. Skalna2, M.Eric3, and A. John, Influence of Internet of things on human psychology (internet of thoughts) for education, healthcare, and businesses, EAI Endorsed Transactions on Mobile Communications and Applications, AGH University of Science and Technology Krakow, Poland
- [7]ZHANG Zhimin1, YIN Rui1, and NING Huansheng1,2" Internet of Brain, Thought, Thinking, and Creation,(1. School of Computer and Communication Engineering, University of Science and Technology Beijing, Beijing 100083, China) (2. Beijing Engineering Research Center for Cyberspace Data Analysis and Applications, Beijing 100083, China), Internet of Brain, Thought, Thinking, and Creation"Chinese Journal of Electronics"
- [8] Internet Brain is a Real Thing. We Need a Common Language to Talk About... | by Brad Stulberg | Medium
- [9] <https://www.techimply.com/blog/iot-powered-brain-computer-interfaces>

- [10]<https://www.drakeinstitute.com/brain-mapping-for-autism#:~:text=Brain%20mapping%20for%20autism%20is,Autism%20Spectrum%20Disorder%20and%20ADHD>.
- [11] Jiayi Sun, Wensheng Gan*, Han-Chieh Chao, Philip S. Yu, Fellow, IEEE and Weiping Ding, Internet of Behaviors: A Survey, _ IEEE Internet of Things Journal (Volume: 10, Issue: 13, 01 July 2023)Page(s): 11117 – 11134
- [12] Hao Luo¹ , Nor Azura Husin² , Teh Noranis Mohd Aris³ , Maslina Zolkepli⁴ , Mohd Yunus Sharum” Prediction of Student Decision-making Behaviour based on Machine Learning Algorithms” ⁵Faculty of Computer Science and Information Technology, Universiti Putra Malaysia, Selangor, Malaysia ¹Faculty of Big Data, University of BaoShan, BaoShan, China, Tuijin Jishu/Journal of Propulsion Technology ISSN: 1001-4055 Vol. 44 No. 6 (2023)
- [13] Ayame Ishida* and Takashi Sekiyam,” Variables influencing students' learning motivation: critical literature review” *ront. Educ.*, 18 October 2024 *Sec. Language, Culture and Diversity* Volume 9 - 2024 | <https://doi.org/10.3389/feduc.2024.1445011>
- [14] <https://www.kdnuggets.com/2020/01/decision-tree-algorithm-explained.html>
- [15] Grace Shina,* , Mohammad Hossein Jarrahia , Yu Feia , Amir Karamib , Nicci Gafinowitza , Ahjung Byunc , Xiaopeng Lua, Wearable activity trackers, accuracy, adoption, acceptance and health impact: A systematic literature review, *Journal of Biomedical Informatics*, a School of Information and Library Science, University of North Carolina at Chapel Hill, USA