Information roles and collaborations in curriculum innovation at the University of Michigan’s A. Alfred Taubman Health Sciences Library

Whitney A. Townsend, MLIS
Uniesity of Michigan’s A. Alfred Taubman Health Sciences Library

[Abstract] To address the ultimate mission to be "a valued partner, fully integrated into the work of the university and providing leadership in knowledge management for education, research, patient care, and community outreach", the University of Michigan A. Alfred Taubman Health Sciences Library (THL) has transformed from retitling librarians as informationists to shifting from a service to a collaboration focus. Informationists at THL have spent several years building relationships and expertise to be true partners in curriculum integration and innovation within the health sciences schools and colleges at the University of Michigan and the curricular integration has becoming a constantly evolving process for THL informationists. Current article focus on how THL convert the librarian into informationist and how to make collaborations in curriculum innovation within different departments to furtherly improve the status of THL library in the University.

[Key words] Mission; Integrated; Informationist; Collaboration focus; Curriculum innovation

BACKGROUND

The University of Michigan A. Alfred Taubman Health Sciences Library (THL) has a stated mission to be "a valued partner, fully integrated into the work of the university and providing leadership in knowledge management for education, research, patient care, and community outreach."[1]. To fulfill this mission, THL administration, Informationists, and staff take a proactive approach to identify and address emerging roles for the library in academic, research, and clinical activities within the health sciences. From re-titling librarians as Informationists[2] to shifting from a service to a collaboration focus, the Taubman Health Sciences Library continues to work on "transforming the health sciences of the future"[3].

This transformation takes many forms at THL, and is a continual process of innovation and reinvention. Systematic review integration, data management planning, research impact analytics, and global health are just a few of the initiatives that THL Informationists incorporate into their daily work. While library instruction is often considered to be one of the more traditional activities that the library is involved in, Informationists at THL have spent years building relationships and expertise to become true partners in curriculum integration and innovation within the health sciences schools and colleges.

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at the University of Michigan.

**OUR PARTNERS: MICHIGAN MEDICINE & UM SCHOOLS OF HEALTH SCIENCES**

The Taubman Health Sciences Library works with a variety of health–related partners on the University of Michigan Ann Arbor campus. THL Informationists collaborate with the faculty, students, and staff in academic units, which include the Medical School, School of Nursing, School of Dentistry, School of Public Health, School of Kinesiology, and College of Pharmacy. In addition, Informationists work directly with the clinical and research faculty and staff of Michigan Medicine, the University of Michigan’s health system.

Michigan Medicine is comprised of over 26,000 faculty, staff, students, trainees, and volunteers. The main medical campus is located in Ann Arbor, Michigan, but includes satellite locations throughout Michigan and northern Ohio that total more than 11 million square feet of clinical and research space. Michigan Medicine personnel fill three hospitals, multiple specialty centers, over 40 outpatient locations, and the North Campus Research Complex (former Pfizer headquarters, purchased by Michigan Medicine). These locations handle over 2.3 million outpatient visits per year, and more than 47,000 hospital stays in 1,000 beds.

Michigan Medicine has a total operating budget of more than $3.3 billion, and boasts one of the United State’s largest research budgets at $466 million. Informationists from the Taubman Health Sciences Library use a liaison model to build relationships with faculty, staff, and trainees in the clinical departments and research units that make up Michigan Medicine; each Informationist acts as the primary point person for a collection of clinical and research units that best align with their individual expertise and interests.

In addition to their Michigan Medicine clinical departments and research units, THL Informationists work in teams to collaborate with the faculty, staff, and students of the health sciences academic units. The University of Michigan Medical School (UMMS), School of Nursing (SoN), School of Dentistry (SoD), School of Public Health (SPH), School of Kinesiology (SoK), and College of Pharmacy (CoP) are each ranked in the top 5 in the United States. Together, the health sciences schools account for almost 50% of the University of Michigan’s $1.48 billion in research expenditures each year while producing some of the most sought–after graduates in the country.

**CURRICULUM INTEGRATION & CURRICULUM MAPPING**

THL Informationists are currently integrated into the curricula of each of the health sciences schools, through in–person instruction, online modules and distance education, individual consultations, and faculty development. This level of integration is not possible without years of individual relationship–building with faculty, students, and decision – makers within each academic unit, and integration points are constantly and consistently reviewed as pedagogy, content, and delivery methods evolve. The development of Core Teams of Informationists for each academic unit has been important to encouraging longitudinal relationship–building and ensuring that the library has the capacity to deliver new and innovative information skills sessions through various modalities. In general, each Core Team works with its respective school on course instruction, resource integration, faculty development & research, curriculum planning, and accreditation, and other school–specific information needs.

While Core Team membership can fluctuate depending on staffing levels and the educational needs of each academic health sciences unit, team composition is roughly:

Informationists on each Core Team have actively worked to be members of their schools’ respective curriculum committees; four teams have member status, and two actively advise curriculum committee faculty. This successful representation on curriculum committees allows the Core Teams to stay abreast of
planned curricular changes while giving the committee members the opportunity to advocate for integration of content that is consistent with the information skills/literacy competencies defined by each school, and with the ACRL Framework for Information Literacy in Higher Education.[8]

<table>
<thead>
<tr>
<th>Academic Unit</th>
<th>Informationists on Core Team</th>
<th>School Curriculum Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical School</td>
<td>6</td>
<td>Member</td>
</tr>
<tr>
<td>Nursing</td>
<td>3</td>
<td>Member</td>
</tr>
<tr>
<td>Dentistry</td>
<td>2</td>
<td>Member</td>
</tr>
<tr>
<td>Kinesiology</td>
<td>2</td>
<td>Advisor</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>2</td>
<td>Advisor</td>
</tr>
<tr>
<td>Public Health</td>
<td>5</td>
<td>Member</td>
</tr>
</tbody>
</table>

Each school and program has different requirements for accreditation with their program’s governing body; for many, this takes the form of standardized competencies that students are expected to meet upon graduation. THL Informationists from each Core Team are currently mapping school and program competencies related to information to the relevant parts of the ACRL Framework in order to demonstrate and reinforce our efforts to integrate scaffolded, relevant information resources and instruction into each curricular path that a student may take.

The UM School of Kinesiology recently became the sixth school of health sciences that partners with THL; as Core Team members began teaching existing information sessions and integrating new sessions and content, all sessions were mapped to the ACRL Framework:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>MvSci 219</th>
<th>MvSci 250</th>
<th>SM 101</th>
<th>SM 249</th>
<th>SM 342</th>
<th>Kines 514</th>
<th>Kines 615</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Title</td>
<td>Scientific writing</td>
<td>Statistics</td>
<td>Public &amp; small group communication</td>
<td>Research methodology in sport management</td>
<td>Strategy of sport organizations</td>
<td>Strategic Management in Sport</td>
<td>Philosophy of science &amp; research in Kinesiology</td>
</tr>
<tr>
<td>Resources</td>
<td>Resources for research in MvSci, RefWorks</td>
<td>Translating research question into a search in article databases</td>
<td>Evaluating web resources</td>
<td>Constructing a search, searching article databases, citation management</td>
<td>Finding industry &amp; company information using subscription resources</td>
<td>Finding industry &amp; company information using subscription resources</td>
<td>Constructing a search, searching article databases, citation management</td>
</tr>
<tr>
<td>Session Focus</td>
<td>Req</td>
<td>Req</td>
<td>Req</td>
<td>Req</td>
<td>Req</td>
<td>Req</td>
<td>Req</td>
</tr>
<tr>
<td>Req/Opt</td>
<td>1,2,3</td>
<td>3,4,6</td>
<td>1,3</td>
<td>3,4,6</td>
<td>1,3,6</td>
<td>1,3,6</td>
<td>3,4,6</td>
</tr>
<tr>
<td>Partners</td>
<td>Clark, Palmier-Smith</td>
<td>Pitchford</td>
<td>LaRoche</td>
<td>Park</td>
<td>Babiak, Heine</td>
<td>Babiak</td>
<td>Park</td>
</tr>
<tr>
<td>In-person</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Video/Online</td>
<td>Canvas module</td>
<td>Canvas module</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CURRICULUM INTEGRATION CASE STUDY: UNIVERSITY OF MICHIGAN MEDICAL SCHOOL

While curriculum mapping is taking place within all academic health sciences units, THL Informationists also leveraged their long-standing relationships and collaborations with the Medical School to play a key role in the development of a new, innovative curriculum development project funded by the American Medical Association. The Core Team for Medical Education has a long history of longitudinal curricular integration, with representation and instruction in all four years of the medical school curriculum. At the time, the medical school curriculum followed a traditional format of two years of preclinical education, and two years of clinical education and experience; Informationist – instructed
sessions focused on background and foundational resources (textbooks), and high level of evidence publication types (practice guidelines, systematic reviews, and point of care resources) for the first two years. Instruction during the clinical years covered additional evidence-based medicine concepts, clinical resources (including drug databases, patient education resources, and mobile device resources), systematic review appraisal, and advanced database searching.

In June 2013, the American Medical Association announced that the UM Medical School was awarded funding to develop a new medical school curriculum, with the goal of fundamentally "transforming the training of tomorrow's doctors". The UM Medical School, along with 10 other founding awardees, began the process of designing a flexible curriculum focused on developing students as outstanding clinicians, but also leaders in health care change.

The Accelerating Change in Medical Education Consortium schools identified six key areas to develop transformative solutions in medical education; while information skills and literacy can relate to all of them, Medical Education Core Team members immediately identified three to focus our integration efforts and curriculum mapping on: Developing flexible, competency-based pathways; Making technology work for learning; and Envisioning the master adaptive learner.

The new curriculum development process began in 2013, with the first full four-year class of students anticipated in 2019. THL Informationists took a proactive approach to integrating into the new curriculum; based on our strong relationships with medical education faculty, Informationists were invited to attend the Medical School Faculty Planning Retreat to participate in idea generation and work group formation. When calls went out to Medical School faculty to volunteer for curricular work groups, Informationists responded and were subsequently added to planning groups related to Leadership and Paths of Excellence; Evidence-based Medicine; Clinical Education; Administration; and more. An Informationist was selected to lead the Evidence-based Medicine working group, which positioned the Core Team to develop information-specific objectives and learning outcomes that were incorporated into the new curriculum.

Participation on the working groups continues to place Informationists in roles that allow increased integration into the new curriculum; many members of initial working groups now sit on the established curricular planning groups and we maintain representation on the Medical School Curriculum Policy Committee. Throughout the curriculum development process, all integration points map directly to the defined Medical School Competencies. Of particular note, Informationists have seen significant success integrating into specific curricular components:

- Optimizing Patient Care Curriculum

The Optimizing Patient Care Curriculum (OPCC) takes the place of traditional EBM education. After leading the initial working group, an Informationist continues to serve as a member of the faculty planning group and other Core Team members act as course planners and instructors in all four years of the planned curriculum. Informationists write and grade formal exam questions related to our delivered content, train medical faculty group leaders on systematic review appraisal, and develop online learning modules and in-person active instructions sessions to meet OPCC objectives and school competencies. In the first two years of the developed curriculum, this has translated into six unique Informationist-led instructions sessions and the integration of multiple online modules.

- Adapted 5S Pyramid

Informationists had long utilized RB Haynes’s 5S Evidence Pyramid into instruction. To address additional information resources in the context of evidence-based resources, Core Team Informationists developed an adapted version of the pyramid, along
with instructional video modules used in the OPCC curriculum and in other health sciences instruction.*14*

**Paths of Excellence**

As part of the new Medical School curriculum focused on developing physician–leaders, the domain-focused elective Path of Excellence program is available to all medical students.*15* Informationist integration into these programs started early, with a dedicated Informationist for Global Health working directly with the Global Health & Disparities Path. Due to the strong relationship and effective integration into the inaugural Path, Informationists were assigned to each subsequent Path as it was developed. Path Informationists work with the faculty and accepted students on longitudinal capstone projects related to their Path. A dedicated LibGuide is created for each Path to direct students to customized, topic-specific resources that they do not encounter during their clinical education.*16*

**CONCLUSIONS**

Curricular integration is a constantly evolving process for THL Informationists, and we continue to foster faculty relationships and build knowledge about school-specific competencies and their relationship to information literacy and emerging information needs. While some components of instruction and integration will likely always be core, like information evaluation and subject-specific resources, it is important to constantly and proactively develop integration points for emerging information needs and trends. Presently, Core Teams for all health sciences units are beginning the work of mapping data education instruction to school competencies, and partnering with faculty to incorporate data use, data stewardship, and data planning into the various health sciences curricula.

**References**

信息学工作者在密歇根大学课程革新中的作用与合作

Whitney A. Townsend, MLIS
密歇根大学 A. Alfred Taubman 医学图书馆

【摘】为了实现将自身塑造成为“一个有价值的合作伙伴,充分融入大学的工作,并在教育、研究、患者护理和社区推广等各方面提供知识管理的领导作用”这一使命，密歇根大学 A. Alfred Taubman 医学图书馆正在实行一系列改革，这包括将图书馆员重新命名为信息学工作者以及从单纯提供服务转向寻求共同协作。Taubman 医学图书馆的信息学工作者花了数年时间建立合作关系和存储专业知识,从而成为密歇根大学医学院和其他学院的课程整合与创新的真正伙伴,该课程整合项目需要信息学工作者不断推陈出新并寻求发展。就如何将馆员转变为信息学工作者,以及如何通过在不同部门的课程创新中进行协作,从而进一步提高图书馆在高校中的地位。

【关键词】使命;整合的;信息学家;合作重点;课程创新

密歇根大学 A. Alfred Taubman 医学图书馆(以下简称“THL”)的一项使命，就是成为一个有价值的合作伙伴，即将自己完全融入到密歇根大学的工作中，提供教育、研究、患者救护、社区范围外服务等知识和管理方面的指导性工作[1]。为了完成这一使命，THL 的行政管理部门、信息学工作者和全体员工采取积极主动的办法，确定了 THL 在卫生科学领域、医学领域、医学研究和临床活动中应该发挥的作用。从将图书馆员改名为信息学工作者[2]到将以服务为重点转变为以合作为重点使 THL 就一直在为未来卫生科学的转化而努力工作[3]。

图书馆的转型不但形式多样，而且还是一个持续不断的革新与再创造过程。系统综述的整合、数据管理计划的制定、研究影响分析和全球卫生的研究，只是 THL 信息学工作者将其纳入他们日常工作的一个例子而已。教学活动常常被视为 THL 参与的一项传统活动，但 THL 的信息学工作者为使自己成为密歇根大学各个医学院系课程整合与革新的真正合作伙伴，已经用多年时间与之建立了密切关系并坚持不懈地提高自己的专业知识。

1 我们的合作伙伴：密歇根大学医学院与卫生科学学院

THL 与密歇根大学各卫生科学学院相关的合作伙伴一起工作，包括密歇根大学医学院、护理学院、口腔学院、公共卫生学院、运动学院和药学院等卫生科学学院的教师、学生和职工。另外，我馆的信息学工作者还直接参与密歇根大学医学院、密歇根大学卫生系统临床与研究人员、教师和职工的工作。

密歇根医学院共有 26 000 多名教师、职工、学生、培训人员和志愿者。医学院的主校园坐落在密歇根的 Ann Arbor,另外还包括遍布整个密歇根州和北俄亥俄州总面积达 1 100 多万平方英尺的临床与研究卫星校区。密歇根大学医学院的人员来自 3 家医院、多学科中心[4]、40 个门诊部和北校园研究复合体(原辉瑞总部,后被密歇根大学医学院收购),这些机构每年的门诊患者数多达到 230 多万。整个密歇根州拥有 1 000 个床位的医院住院患者 47 000 余人次。

密歇根大学医学院的总运转预算经费额高达 30.3 亿多美元,远远高于美国其他机构的最高预算经费(4.66 亿多美元)[5]。Taubman 医学图书馆的信息学工作者用联络人模式与密歇根各医学院临床部与研究单位的教师、职工、学生和培训人员建立了合作伙伴关系。每个信息学工作者作为关键人员(primary point person)的身份和具有丰富专业知识及浓厚兴趣的临床与研究单位的人员构成一个团队[6]。

THL 的信息学工作者除与密歇根大学各医学院
临床部与研究单位合作外,还与各个卫生科学学院的教师、职工和学生开展合作。密歇根大学医学院、护理学院、口腔学院、公共卫生学院、运动学院和药学院是全美排名前 5 位的卫生科学学院。密歇根大学各卫生科学学院每年的研究经费约占密歇根大学医学总研究经费(10.48 亿美元)的 50% [7]。

2 课程整合与课程表制定

THL 信息学工作者在课堂教学中, 在线模块, 远程教育、个人咨询和教师开发等方面的表现, 不但得到
了各卫生科学学院的认可, 而且已被整合到它们教
学任务的教师队伍中。我要强调的是, 不经过数年
时间构建与这些学院的教师、学生和决策者的个
人关系, 根本不可能完成这种级别的整合。

由于教育学、教学内容和授课方法的不断发展
变化, 所以要坚持不懈地审查整合的要点, 构建各卫
生科学学院信息学工作者核心团队, 通过各种方式
创建和保证图书馆具有传授新的创新性信息技术的
能力, 这对鼓励图书馆构建横向关系具有重要意义。
总之, 每个核心团队应与其相关实验室在课程教学、资
源整合、教师开发与研究、课程安排、课程选定及特
定信息需求等方面进行合作。

核心团队的成员可根据其相关卫生科学学院员
工的工作能力和教育需求, 实行弹性工作制。每个
核心团队构成的大致情况如表 1 所示。

<table>
<thead>
<tr>
<th>学院</th>
<th>信息学核心团队数</th>
<th>课程整合者职务</th>
</tr>
</thead>
<tbody>
<tr>
<td>医学院</td>
<td>6</td>
<td>会员</td>
</tr>
<tr>
<td>护理学院</td>
<td>3</td>
<td>会员</td>
</tr>
<tr>
<td>口腔学院</td>
<td>2</td>
<td>会员</td>
</tr>
<tr>
<td>运动学院</td>
<td>2</td>
<td>顾问</td>
</tr>
<tr>
<td>药学院</td>
<td>2</td>
<td>顾问</td>
</tr>
<tr>
<td>公共卫生学院</td>
<td>5</td>
<td>会员</td>
</tr>
</tbody>
</table>

在各核心团队工作的信息学工作者因工作积极
和卓有成效而成为各个卫生科学学院相关课程委员
会的成员。其中 4 个核心团队的信息学工作者已成
为医学院、护理学院、口腔学院、公共卫生学院相关
课程委员会的成员, 2 个核心团队的信息学工作者
已成为运动学院和药学院相关课程委员会教师的顾
问。正是因为各个卫生科学学院相关课程委员会的
优秀业绩, 核心团队才能修改原课程计划, 使各个卫
生科学学院相关课程委员会的会员提供将信息技术
能力/素养能力课程内容整合的机会。

课程委员会会员对课程内容进行整合, 是根据
各个卫生科学学院定义的信息技术、信息素养和高
等教育的 ACRL 信息素养框架开展的 [8]。

每个卫生科学学院对其主管部门所选定的教学
大纲的要求有所不同, 多数卫生科学学院对教学
d大纲的要求是保证学生在毕业的时候能够达到教学
d大纲所规定的能力。

为了展示和强化 THL 将教学整合框架、相关信
息资源、教学内容整合到学生可能要采纳的课程途
径方面所做出的努力, 来自各个学院核心团队的
THL 信息学工作者正在制定各卫生科学学院教学大
纲相关信息学教学和 ACRL 框架下的相关学科教学的
课程表。在不久之前, 密歇根大学运动学院刚刚成
为与 THL 建立合作伙伴关系的第 6 所卫生科学学
院, 运动学院作为核心团队的成员, 已经开始承担各
个学期的信息教学任务,并且开始整合新学期的教
学内容。

根据 ACRL 框架制定的各学期课程表, 课程名
称, 学期重点教学内容及合作伙伴如表 2 所示。

3 课程整合案例研究: 密歇根大学医学院

THL 信息学工作者在制定各卫生科学学院课程
表的同时, 还努力和医学院发展关系与进行合作, 以
便在新的创新性开发和美国医学会基金资助的
开发项目中发挥长期作用。医学教育核心团队在纵
向课程整合方面具有悠久的历史, 过去 4 年在完成
医学院课程教学任务方面发挥了核心作用。医学院
在过去 4 年中, 用 2 年时间以传统方式完成基础医
学课程, 用 2 年时间完成了临床课程。信息科学工
作者在前 2 年各学期中, 主要担任背景和基础资源
(教科书) 以及各类高水平循证出版物(使用指南、系统
综述、护理资源概要) 的教学任务; 在后 2 年各学期
中, 主要担任临床相关的教学任务, 包括循证医学概
念, 临床资源(药物数据库、患者教育资源、移动设备
资源), 系统综述评议与高级数据库检索 [9]。
表 2 根据 ACRL 框架制定的各学院嵌入式课程表及教学重点

<table>
<thead>
<tr>
<th>课程编号</th>
<th>名称</th>
<th>学期重点</th>
<th>Req/Opt</th>
<th>ACRL 框架</th>
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<td>科学写作</td>
<td>MsSci 和 RefWorks 中的资源</td>
<td>Req</td>
<td>1,2,3</td>
<td>Clark, Palmieri-Smith</td>
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<td>统计学</td>
<td>将研究问题转换成文献数据库检索语言</td>
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2013 年，美国医学协会宣布了美国医学会基金资助的密歇根大学医学院的获奖项目；以改革未来医生培训为目标的新课程。此后，密歇根大学医学院与另外 10 名美国医学会基金资助项目的获选者便开始着手设计和开发使学生成为杰出临床医生与卫生保健变革带头人的仅行课程。随着教学研究联合会变革进程的加快，各卫生科学学院选定了 6 个关键领域作为医学教育重点的要素。考虑到信息技术和信息素养的预期目标与医学教育转化，核心团队成员重点对其中 3 个卫生科学学院进行了整合，为其制定了基于能力的灵活课程表，使技术服务于学习，展望了适应硕士生学习的课程前景

新课程的开设始于 2013 年，新课程的课程安排在全年的 4 年制的学生课程[10]。THL 信息学工作者以极大的热情整合新课程，基于其与医学教育教师之间的稳固关系，信息学工作者受命出席了医学院教师规划大会，会议期间成立工作小组，集中了与会者提出的相关意见。在召开工作小组担任医学院教师志愿者时，THL 信息学工作者积极响应，并随后加入了领导艺术和优秀教师培养、循证医学、临床教育或其他活动的计划小组。会中还选出一名信息学专家担任循证医学工作组的组长，循证医学工作组的任务是指导核心团队制定具体的信息

目标和检查新课程的学习效果。

作为循证医学工作组的组长，信息学专家的任务是进一步将具体的信息目标整合到新课程中。不少以前的循证医学工作组成员，现在成为了课程计划小组成员，我们将继续保留医学课程政策委员会的代表资格。在整个课程开发的进程中，所有的整合要素都直接指向已明确定义的医学院教学能力[12]。值得特别关注的是，信息学工作者在整合具体课程内容中取得了显著成绩。

3.1 优化患者护理课程

优化患者护理课程（Optimizing Patient Care Curriculum, OPCC）始于传统循证医学教育。担任循证医学工作组组长后，一名信息学工作者继续作为教师计划小组成员和其他核心团队的计划者和指导者，担任全院 4 年制学生的教学任务。信息学工作者除了要给其相关教学内容的等级考试出试题外，还要对医学教员工作组进行系统综述评论方面的培训，开发在线学习模块和面对面授课，以实现优化患者护理课程的目标和提高医学院教师的教学能力。在前 2 年内，已将 6 个信息学工作者主导的课程教学整合到多个在线模块。

3.2 5S金字塔模型的改进

信息学工作者在教学中使用 RB Haynes 5S
据金字塔模型已有很长时间了。在循证资源方面增加一些其他的信息资源，核心团队信息学工作者开发了新款证据金字塔模型，已经用于优化患者护理课程和其他卫生科学教学的视频模块[14]。

3.3 卓越计划选修路径

作为旨在培养主管医生的医学院新课程的一部分，所有医学生都可以选修以学科领域为核心的卓越计划选修路径[15]。将信息学工作者整合到这些卓越计划的工作早已开始，全球医学信息学工作者可以全身心地直接服务于全球健康卓越医师计划中。由于信息学工作者和核心团队之间的稳固关系和已将不同教学大纲有效地整合到其不同的卓越计划选修路径，因此他们被安置在各个路径中，在与卓越计划选修路径工作的信息学工作者、各卫生科学学院教师以及与其选修路径相关的纵向顶级项目的学生一起工作，并为每个卓越计划选修路径创建了专有的LibGuide，指导学生在其接受临床教育期间可以用它查找个性化的目标定向资源[16]

4 结论

课程整合是THL信息学工作者一项长期和持续不断的工作，我们将继续强化和保持与各卫生科学学院教师的关系，创建关于各卫生科学学院专业能力的知识及其与信息素养及新信息需求之间的关系。某些教学内容及其整合可能一直是我们的一项核心工作，如信息评价和专题资源，坚持不懈主动地开发满足新信息需求及发展趋势的整合点具有重要意义。目前，为了提高各卫生科学学院的教学能力，由各卫生科学学院成员构成的核心团队正在制定数据教育的课程表，并与各卫生科学学院的教师合作将数据使用、数据管理、数据计划融入不同的卫生科学课程中。

【参考文献】


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