Preparing students for an evidence-based health service – a collaboration between the University Library and faculty

Best practice article

Kari Kalland, Lilja Marlen Johannessen

University Library, OsloMet – Oslo Metropolitan University

Abstract

The Faculty of Health Sciences, OsloMet (Oslo Metropolitan University), first launched the joint course 'Introduction to Evidence-Based Practice in Health Care' in the fall semester 2020, with University Librarians as collaborative partners. The aim of the course is to ensure that OsloMet undergraduate students in the health sciences will be given the same platform for building their ability for evidence-based work. This best practice article is based on our presentation at the conference 'Creating Knowledge 2021'. Here we shared some of our experiences of the collaboration with the faculty in the planning and implementation of this course, and the course design featuring flipped classroom structure and digital, student active teaching sessions. We will present examples of student course assignments, evaluation from students and faculty staff, and some course adjustments based on the feedback. This course gives both the library, the faculty and all our different health care students a common platform for teaching and learning evidence-based practice.

Keywords: evidence-based practice, health care, health service, health care students, undergraduate students, library–faculty collaboration, librarians, higher education, active learning, digital learning

*Contact:
e-mail: kari.kalland@oslomet.no

Why was this joint introductory course developed and why are the librarians involved?

According to the National Curriculum Regulations for Norwegian Health and Welfare Education (RETHOS), all higher education institutions in Norway are legally required to give students in the health and welfare sciences competence that enables them to evidence-base their practice when working in the Norwegian health services ([National Curriculum Regulations for Norwegian Health and Welfare Education], 2017, §2; Ministry of Education and Research, n.d.).

In response to this requirement, The Faculty of Health Sciences, OsloMet, developed a 5 credit, mandatory course called 'Introduction to evidence-based practice (EBP)' (e.g. OsloMet, 2020) – an important first step in building the students' EBP competence. With this course, 'traditional' library instruction topics, such as literature searching and source evaluation, are naturally integrated into the EBP context, making the University Library a natural collaborative partner for the faculty. The students' competence in these EBP topics, and in evidence-based practice in general, will be further developed during their study programs.

After a period of planning and preparation, the roll-out of the joint course started in the fall semester 2020, and by June 2021 when we presented at Creating Knowledge (https://site.uit.no/ck2020/), 480 students had participated. At this time of writing, March 2022, the number of participants is approximately 2000, from a range of undergraduate study programs: bioengineering, nursing, occupational therapy, physiotherapy, learning disability nursing (in Norwegian: vernepleie), pharmacy, and dental technology.

A continuing process of course quality improvement includes student focus group interviews, student surveys, and evaluation and feedback from faculty staff and librarians.

Evidence-based practice and the structure of the course

There are many definitions and perceptions of EBP, and what it entails, but the essence is that health care decisions should be based on the best research evidence, on clinical expertise, and on the preferences and values of a patient – within the practice context (Hoffmann et al., 2017, pp. 3–4). The patient can also be a client, a service user or consumer, depending on the setting or context. The core competencies needed for evidence-based practice are closely related to the steps in the EBP process (https://www.helsebiblioteket.no/kunnskapsbasert-praksis), which the students are introduced to in this course:

- Reflection (identify information needs)
- Asking (precise) questions
- Finding the evidence (literature search)
- Critically appraise and interpret the evidence
- Apply (implement evidence to practice)
- Evaluate the new practice

The course structure is inspired by the EBP steps. Over the duration of the course, students use the steps cumulatively to interrogate claims about health drawn from the media. The first session in the course is called 'Behind the headlines' (https://bakoverskriftene.oslomet.no/about/), and the aim is to improve students' capacity to critically reflect on the reliability of research underpinning media health claims – in other words, they identify information needs from media stories, before librarians get involved for the next two steps. These two steps are 'Asking questions' and 'Finding and identifying the evidence', which correspond to literature search techniques.

The course's main learning outcomes in the step 'Asking questions' concern PICO (as a tool for developing precise clinical questions), clinical questions, and the connection between clinical question types and study designs.

The main learning outcomes for the next step, 'Finding the evidence', focus on the different levels of the 5S Evidence Pyramid (Kunnskapsbasertpraksis.no, 2016b) and what they represent. The pyramid offers "a functional model for selecting evidence-based information for clinical care and organizing search retrieval for the most efficient approach to evidence-based practice" (Alper & Haynes, 2016, p. 125). Our students are introduced to performing simple searches in sources from the top levels in the S-pyramid – clinical decision tools, guidelines and systematic reviews. The content of our sessions and the principles we teach are the same for all students regardless of which health science study program they are attending. The principles for using PICO and finding evidence, for example, are the same for all the students. The only thing that differs is the customized examples related to the students' practice fields, which make the content even more relevant for the different study programs. Nursing students are taught PICO with nursing-related clinical questions and topics, while the physiotherapy students are given examples related to their practice field (Figure 3). When performing the literature search, they will use relevant search terms for that question/topic.

The interrogation of health claims is a thread throughout the course, culminating in part with the exam paper, where the students choose a health claim of interest from a set of predefined claims. One of the assignments in the exam paper is to use PICO to turn the claim into a precise question, while another is searching the top levels of the S-pyramid to find evidence regarding the chosen health claim. The students also discuss whether the evidence from the literature search confirms or refutes the health claim (or maybe suggests that there is not enough evidence to be completely certain), and whether the results can be transferred to a Norwegian context.

Experiences – digital and active learning methods for larger groups of students

What is more appropriate in a course about evidence-based practice than attempting an evidence-based approach to teaching and learning? Numerous studies have reported the positive impact methods and tools related to active learning can have upon students' learning

outcomes, and their potential affordances compared to traditional lectures (e.g. Aguilar et al., 2020; Foldnes, 2016; Låg & Sæle, 2019; Michael, 2006; Prince, 2004). In addition, the Ministry of Education and Research encourages and emphasizes the use of active and digital learning methods in order to enhance student learning and prepare students for their future professional life (Meld. St. 16 (2020–2021), Chapter 4). Therefore, the entire course is designed with multiple approaches such as flipped classroom, team-based, case-based and peer instruction learning activities; all active learning strategies selected to involve the students and increase their engagement and learning. Digital learning resources are therefore made available to the students in advance (but also during and after our sessions) in a module on our learning management system, Canvas. These resources consists of different videos, texts, quizzes and web pages, and in addition, our students get access to another EBP Canvas resource from Western Norway University of Applied Sciences (Høgskulen i Vestlandet), 'Kunnskapsbasert praksis på tvers' [Interdisciplinary evidence-based practice] (https://www.hvl.no/om/organisering/fhs/kbp-pa-tvers/).

The Canvas structure of OsloMet's introductory EBP course echoes the EBP steps. The students are given dedicated time in their course schedule to prepare for our sessions with relevant resources. This is to highlight the necessity of preparations for the students, allowing us to 'flip the classroom'. The librarians' teaching sessions are digital (Zoom), set up as separate sessions over two days. They last about 3-4 hours and involve 2-3 librarians in each session. The digital format facilitates great flexibility regarding class sizes, from the smallest class of just below 70, to the larger groups of approximately 300 students. Student active learning sessions could be challenging in the pre-Covid-19 era with physical attendance for such large student groups, but with a digital platform like Zoom it is quite manageable in terms of both the numbers of librarians required, and what we can achieve with student active learning methods. Some of the challenges we experienced, related to the digital format and flipping as a teaching method, will be described later in this article.

In the beginning of the teaching sessions, we use polls in Zoom to quiz the students. See Figures 1 and 2 for examples of polls (PICO and clinical questions).

Figure 1. PICO poll

Figure 2. Clinical question poll

The students often give positive feedback on how we use the Zoom polls, and our experience is that they can have several functions. First and foremost, they function as a learning activity where the students (anonymously) can activate what they have read or learned on their own before class. Second, we librarians get a picture of how well the students have prepared and what they have understood, and it gives us a natural opportunity to correct any misunderstandings or misconceptions.

As mentioned, we also use Canvas during our sessions; for instance, when the students are given individual or group assignments. For the group assignments, we use the breakout rooms in Zoom. The students have a predefined amount of time for working on the assignments, and when they are working in groups, they choose a note-taker and one person who keeps track of time. The note-taker will write answers on behalf of the group in the Zoom chat. Afterwards

we talk about how the assignment could be completed and discuss different suggestions for solutions.

See Figure 3 for the PICO group assignment for the physiotherapy students. This example illustrates how we adjust the content to our different study programs.

Figure 3. Example of a PICO group assignment

We also teach the students about different clinical questions. These are prototypes of typical questions we ask within the health sciences and health services, such as questions about prevalence, causation, experience or effects of interventions (Kunnskapsbasertpraksis.no, 2016a; Figure 2). Figure 4 shows an example of a group assignment where the physiotherapy students are presented with four questions related to their subject area and will discuss what kind of clinical questions these may represent.

Figure 4. Example of a clinical group question assignment

The literature search assignments must be solved individually as we want all students to learn how to perform basic searches at the top levels of the S-pyramid on their own.

The library-faculty collaboration

From the outset, the librarians were part of the working group developing this course, alongside faculty staff. This means being involved and contributing when making course descriptions, defining learning outcomes, formulating parts of the exam paper, and developing the teaching material covering 'our' two EBP steps, as mentioned earlier. In addition to regular faculty-library meetings, we also work as a team in the 'help desk' sessions, where students get immediate feedback on their exam projects and any questions they may have. Feedback is an important part of the learning process, giving the students responses so they know what and why they have done well. At the same time the help desk sessions give the librarians and faculty staff an impression of the students' learning progress. This helps us evaluate and further develop this specific joint introduction course; at the same time, it allows us librarians to improve other courses and sessions we are involved in. The librarians' role in this course is therefore beneficial for our other teaching sessions as well, and, moreover, enhances our collaboration with faculty staff in the health sciences in general. Both parties now have a better understanding of each other's competencies.

The course serves as a primer in information literacy, critical appraisal and literature searching – an excellent starting point for further library-faculty collaboration on library instruction sessions given later in the study programs. Traditionally there has been a great diversity in the different study programs regarding how often, the amount of time and the content of what we librarians teach the students. With this course, the library, the faculty, and all our different health care students have a common platform for teaching and learning evidence-based practice.

When we asked faculty staff how they evaluated our collaboration, some of them commented that working together in a multi-disciplinary team facilitated better learning for the students. Here is a small selection of statements:

- We complemented each other… the way the librarians used Zoom, with polls and breakout rooms, we are really impressed!
- The University Library gives us a 'boost' with digital learning!
- The Library makes learning sessions even more relevant for the students with subject-specific examples.
- The librarians play a positive role in planning, teaching, and participating in seminars.
- It's great working together!
- Without the University Library, this wouldn't be so successful!

Both librarians and faculty staff were curious about how the students experienced the course. The faculty staff organized rapid focus group interviews with students from the different study programs, and students were asked to evaluate the relevance of the course. Terms like 'useful', 'relevant' and 'important' were frequently used when students were asked to express their opinions. Below are some examples of the student comments:

- Very useful as a student and as a future health worker. Immediate benefit. Important no matter what – both as a student and as a human being.
- We have learned a way to stay up-to-date, find research and the knowledge behind it.

- … useful in practice, when we are going to write a bachelor's thesis and when we have finished our education.
- Very useful, both for study, everyday life and work.

When asked about evaluating the structure of the course, the majority of the focus group students were satisfied with the way it was organized with seminars and group work. Some examples of comments:

- The seminars were important. Liked that it was group work.
- Enjoyed it very much. Thought it was going to be boring. The structure of the course made it exciting.
- It's easier to learn when you are in a team. Easier to discuss, we changed our thoughts and views by listening to others.

Not all student feedback was positive, though. Some commented on how co-students vanished in (digital) breakout rooms:

- It's easier to 'disappear' with the digital breakout rooms, I think it would be better with more physical attendance.

Challenges and adjustments related to contextual factors such as digital format, and flipping as a teaching method

Because of the large student groups the course was initially set up with digital learning resources (as previously mentioned), and mainly online teaching and learning sessions. The Covid situation escalated during the same period as the implementation of this course and had an enormous worldwide impact on universities' teaching and learning activities. The digital set up of this course allowed us to implement as planned, with only minor adjustments related to the pandemic restrictions.

For the students, though, the pandemic necessitated that all their courses and lectures in their study program were transferred to the digital format, and we believe that this new situation led to a digital overload for the students, which in turn has contributed to 'zoom fatigue'. Student feedback, and evaluation from faculty and librarians, over time show an increasing challenge with digital elements like breakout rooms in Zoom. We believe this to be closely related to the overall situation due to Covid-19, dominated by digital overload over time, combined with a social and physical relations 'deficiency' among the students.

In the first completion of the course for the physiotherapist students, our two sessions (step 2 and step 3 in EBP) were held in only one day, with a total duration of approximately 6,5 hours. The librarians experienced a lack of time covering all the content, and that the time between the two sessions was also too short. Student evaluations confirmed this and reminded us that too much content in too little time can be quite exhausting for both students and teachers –regardless of the digital or physical format. Improvements were made by splitting the content over two separate, consecutive days, and increasing the length of the second session by 45 minutes to make sure there's enough time for breaks and questions from the students. This has proven to be a better solution for all involved parties.

Recent course evaluations from faculty staff and librarians expressed concerns over

increased student passivity and vanishing during the breakout room assignments in Zoom, in addition to 'black screens' by turning off the camera.

Another problem we have encountered is related to the flipped classroom approach, and the lack of student preparations. This is a well-known challenge with this teaching method – a good result presupposes a certain amount of preparations and personal effort during the student active teaching sessions (Long et al., 2017; Shibukawa & Taguchi, 2019; Yumuşak, 2020). Despite dedicated time, clear instructions and repeated messages to students about the necessary preparations, we are familiar with the fact that not all students prepare themselves before the sessions. We start our sessions with anonymous polls where students are asked if they have done their 'homework', the options are 'Yes, everything', 'Some' or 'Not at all'. These answers, combined with subsequent polls about preparations, increase our sense that student preparations can be lacking. This may have been a contributing factor to some of the students being passive in the breakout rooms in Zoom.

In addition to the contextual factors mentioned above, the sustainability of this course is directly connected to the resources available. Faculty course managers have pointed out the need for resources in terms of time and people from the parties involved in the different study programs and the University Library, to maintain a dedicated collaborative team that can continue further developing the joint introduction course in EBP.

Conclusion and reflections

Librarians at the University Library at OsloMet have a long tradition of teaching and supervision in information literacy in the health sciences; in, among other things, literature searching and source evaluation. With the joint course 'Introduction to Evidence-Based Practice in Health Care', this teaching is integrated and anchored in a larger academic context for the students and consolidated by an exam which is closely linked to several of the EBP steps. Since this joint course is compulsory, we know that the students must have acquired a certain knowledge of evidence-based practice, literature search, etc. when we meet them for teaching later in their studies. From the librarians' point of view, this joint course is a foundation to build on that truly facilitates spiral learning, something we believe is of great importance when giving students the tools and skills they need for evidence-based work after they have graduated. The librarians also experience that the work on this joint course has strengthened already effective collaborations we have with teachers and course coordinators at the faculties – and not least has created many new relationships that in turn will benefit our students.

In times of repeated cutbacks in the library sector, it has been challenging to find time and resources to develop and institute this joint course. Despite this, considering the vast amount of undergraduate students in the health programs reached on such an important topic, it is truly worth the effort. In our opinion, there is no doubt that resources spent has been a valuable investment.

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