

Combining Expertise: Reflecting on a Team Approach to Curriculum Development and Implementation



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ABSTRACT

INTRODUCTION: This article discussed curriculum development and implementation using a unique collaboration of basic scientists and clinicians functioning as course co-directors. It explores the pros, cons, and unintended consequences of this integrated approach through reflections of the faculty involved.

METHODS: Ten faculty participated in semi-structured phone interviews to reflect on their experiences.

RESULTS: Analysis of interview transcripts revealed four key themes: (1) the value of the basic scientist and clinician partnership, (2) strategies for coordination, (3) balancing responsibilities, and (4) hierarchy and power.

DISCUSSION: This study identified that both basic scientists and clinicians experienced benefits from using a course co-director collaborative approach to curriculum development and implementation. While challenges are also noted, the benefits of the collaboration were evident in course organization, course evaluation reports, student feedback, and USMLE Step I pass rate.

KEYWORDS: curriculum development, curriculum implementation, collaboration, reflection, team approach, medical education, faculty

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Introduction

Central Michigan University's College of Medicine welcomed its inaugural class of medical students in the fall of 2013. As a new medical school, the faculty were tasked with the development of an 18-month preclerkship curriculum that was objective based, utilized patient- or community-focused cases, and integrated the foundational (basic) sciences and clinical sciences throughout the curriculum. Faculty were to employ multiple learner-centered, active instructional strategies in both large- and small-group sessions. Specifically, the curriculum consisted of a semester-long Foundational Sciences of Medicine course, seven organ systems courses, a capstone synapse course, and three longitudinal courses—Society and Community Medicine, Art of Medicine, and Essentials of Clinical Skills.

During the curriculum development process and later during the implementation of the curriculum, the faculty worked in assigned teams composed of basic scientists and clinicians. These teams were led by course co-directors—one basic scientist and one clinician.

This article shares the reflections of faculty involved in curriculum development and implementation based on the collaboration of basic scientists and clinicians functioning as course co-directors. Through semistructured interviews, the faculty address the pros and cons of this approach and highlight the

unintended consequences resulting from this collaboration. (This study was determined to be exempt from review by the Central Michigan University Institutional Review Board). Lessons learned from this article may inform future curriculum practices and guide the selection of faculty who will lead development or redesign and implementation at other new or existing institutions.

Literature Review

Medical education curriculum development and implementation is often discussed from a design perspective based on well-established models, such as the Flexner Report,¹ Kern's Six-Step Approach,² and accrediting body standards.^{3–5} Other literature focuses on curriculum development for specific content areas^{6,7} or innovative ways of how the content is delivered.⁸ Curriculum development using an interdisciplinary approach and addressing interdisciplinary teams is addressed in the article by Pfeifer et al⁷ in which they discuss the lessons learned from an interdisciplinary approach to developing a palliative care curriculum. Lazarus et al⁸ also discuss using a team approach in the development of a musculoskeletal anatomy elective; however, a gap exists in the literature specifically addressing a co-course scientist/clinician-led curriculum development model.



Using faculty reflection to investigate the experiences of the course co-directors provides keen insights into the successes and challenges during the curriculum development and implementation processes. Reflection of faculty experiences is not new. As Sellheim and Weddle⁹ indicate, several philosophers and educational scholars^{10–15} have explored reflection to provide meaning, definitions, and use of reflection. While there are many uses of reflection, process reflection, in particular, explores the methods and effectiveness of those methods to address a problem.^{9,16,17}

In a recent article, Wald¹⁸ discusses the practice of reflection for physicians. To guide this reflection, she offers a refined (indicated in bold) definition of reflection based on Sandars¹⁹ definition:

Reflection is a metacognitive process including **connecting with feelings** that occurs before, during, and after situations with the purpose of developing greater **awareness and** understanding of self, **other, and** situation so that future encounters with the situation including **ways of being, relating, and doing** are informed from previous encounters.¹⁸

In this study, faculty reflection is used after the curriculum development and implementation processes to reveal the experiences, insights, and lessons learned along the way.

Methods

A qualitative approach using person-to-person interviews was selected for this study. This approach was appropriate to this type of study for several reasons. First, a qualitative study provided an opportunity to construct the realities of perceptions of faculty by using an interpretive approach to understand the meaning of the faculty experiences.²⁰ Second, a qualitative design was appropriate for a study in which experiences and personal strategies are explored.²¹ It also provides a focus for the researchers on interpretation and meaning of the data.²⁰ Finally, a semistructured approach with open-ended questions allowed participants to explore their unique experiences with curriculum development and integration in the private setting of an interview that allowed for candid, personal responses.²⁰

The interview approach to data collection provides direct quotations from people about their experiences, opinions, feelings, and knowledge.²⁰ The purpose of a person-to-person interview is to find out what is on people's minds, their feelings about a certain topic, and how they interpret the world around them.²⁰ One of the features of an interview is that the resulting data is indirect information filtered through the views of the interviewee.²¹ In this study, the person-to-person interview was an appropriate data collection method because of the potentially sensitive topic working with other faculty from various disciplines. Finally, a qualitative approach helped develop a rich perspective of curriculum development and implementation issues and identify areas for future research.²⁰

The interviews followed an informal, semistructured approach using five questions and allowing the respondents to define the issues from their own perspectives.²⁰ The interviews allowed the faculty to reflect on the roles they held and their experiences with the collaborative process used during the curriculum development and implementation processes. Each faculty member responded to the following questions:

1. What was your role in the development of the curriculum?
2. What was your role in the implementation of the curriculum?

As you think back on the collaborative process used to establish this curriculum,

3. What worked for you?
4. What challenges did you face?
5. What surprised you?

At the end of the second year of the new curriculum (Summer 2015), an email invitation from the primary author was sent to 26 current Central Michigan University (CMU) faculty (14 clinical and 12 basic sciences) who were involved in the development and implementation phases of the curriculum. This invitation requested that they participate in a brief 30-minute interview to discuss their role(s) and reflections. Ten faculty self-selected for the interviews by responding to the invite indicating their willingness to participate. A total of 10 faculty were interviewed—6 basic scientists and 4 clinicians. Five of the basic scientists are junior faculty and new to teaching in a medical school, and one is a senior faculty who has been involved in curriculum development and course design at other medical schools. Three of the clinicians are new to teaching in a medical school and curriculum development. Hence, eight of the faculty interviewed are ranked junior and new to medical education.

Each faculty member interviewed was told the purpose of the study and asked for their permission to record the interview. The faculty interviewed reflected on their curriculum development and implementation experiences by responding to question prompts. All the interviews were conducted by the primary author. Each interview was allotted 30 minutes and conducted either in person or by using the Skype for Business online audio/video call application with recording capabilities. Interview recordings were transcribed by REV.com and returned electronically to the researchers for analysis. Transcripts were analyzed and coded for emergent themes by both authors separately prior to their meeting to compare findings. Any variations in themes were discussed and reconciled.

Results

The faculty interviewed reflected on their curriculum development and implementation experiences by responding to



question prompts. Within their responses to each question, key aspects of the faculty experiences emerged and coalesced around four themes as follows: (1) the value of the basic scientist and clinician partnership, (2) strategies for coordination, (3) balancing responsibilities, and (4) hierarchy and power.

Those interviewed ranged in rank from junior tenure-track faculty to senior tenured faculty and associate clinical professor. A few of the faculty had been involved two years before the first class matriculated; others arrived within a year of the start of the program. One faculty member was invited by the founding dean to develop curriculum for the new medical school, including course schedules and topics of lectures and clinical cases. Some faculty had no prior curriculum development experience and had never worked in a medical school before. A couple faculty helped to create the learning objectives for the curriculum and worked with different disciplines to determine content and content delivery format. All the faculty interviewed served as course co-directors, and some course co-directors worked with multiple organ systems teams to create curriculum specific to each system.

The value of the basic scientist and clinician partnership. The faculty interviewed expressed that they were pleased with the way faculty worked together and the dedication they had for the program. As one faculty member said,

“I was surprised by how well the two discipline faculties integrated together, aside from the time delay in so many materials. All my colleagues were reaching out to me as a clinician and giving their input. They were very receptive to modification. Personally I did not run into any situation where I had some push-back of clinical input. Everybody welcomed it and took it to heart.”

Another faculty noted,

“It was important to have dedicated faculty there driven toward the same goal and having students as priority. It wasn’t an easy process—a lot of different trains of thought as far as what material was important and needing to be taught. Always a tug of war between too much science or too much clinical. It was always important to respect each other to ensure we covered the right material.”

Another thought that a combination of expertise was essential and noted, “It requires a very ... experienced basic scientist with training in clinical environments in order to know what is important” and another said that it “has to be an equal partnership.”

Several faculty mentioned how they exchanged ideas between disciplines with their course co-director. The clinicians talked about the importance of having input from their basic science colleagues and having them point out what was important from a science perspective. Basic scientists mentioned the value of getting perspective from the clinicians

on application of the concepts in the clinical environment. As one faculty member said,

“We’d always throw things at each other on how you approach this from a basic science standpoint. He would do the same thing for me. That’s how we maintained that equal balance between the two disciplines, so to speak.”

A clinician commented,

“I thought it was extremely helpful to work with a basic scientist, and many basic scientists, because we each took what we thought was the most important for the medical students, and they were directly related to each other and put them together, in a logical way, I think.”

Another one said,

“I had the basic scientists telling me what they thought was important. Then I have the clinical staff telling them what I thought was important. You could put those together in the same case, the same lecture, instead of having them two separate lectures, you put them together and this is directly how they relate to each other.”

And another commented,

“I really like the collaborative nature. I like talking to people about what they were doing, what they’re doing in different courses, what we should cover here versus there. That all worked for me pretty well, I think.” One of the junior faculty noted that, while working in a medical school was new and different from the bench research he had been doing, he found working with his colleagues was beneficial and helped him acclimate to teaching in a medical school.

The faculty talked about the interactions they experienced and shared their reactions. One junior faculty scientist said,

“Sitting at the table with people with so many different backgrounds and hearing that depth of knowledge, that breadth of knowledge, has been really amazing to experience, especially for a basic scientist. To actually hear the clinical side of things, to hear about the patient experience I’m generally a stereotypical cynical scientist who just thinks about molecular interactions. I don’t think about patient interactions. That has been a pretty cool experience.”

Another junior faculty noted,

“It sort of surprised me as to how the default assumption is that it’s going to be very challenging and physicians are



not easy to work with. I know there is a historical divide there. Even the medical curricula across the country are designed in keeping the divide they have in the first two years of basic science training. Then they (students) leave and we never see them again. There isn't really If they don't want there to be, there isn't a need for clinician and basic scientist to interact. It's just lack of understanding on the basic scientist side of what's involved in a career as a clinician, what's important to them, and their career development. I think we should be pleased with how it's gone, and how engaged the clinical faculty is still are. I think, as I said, it's going to be important to try and maintain the clinician involvement in the first two years because I can already see some issues."

The interactions were not always positive, as one faculty member noted,

"Certainly, I guess the strength of opinions that some faculty members embraced was a surprise. Most of the faculty readily bought into the sense of community decision making and compromise, but some of the faculty, on reflection perhaps not so surprisingly, saw only one way to accomplish a task—their way. It was a challenge to get everyone to buy into the final product; however, even those who held strong opinions, that did not win the day, showed a great deal of grace and acceptance of the final product."

Another said he was surprised by the approach taken by others and stated,

"The personal opinions coming from a team that was made up of scientists, either foundational or clinical, and it wasn't straight forward using data, but more personal opinions about what information needed to be included even if it was more detailed and complicated than what a physician needs."

Yet compromise was common, as one faculty noted,

"Another thing that really amazed me was the adaptability of the majority of the faculty. This adaptability was seen in their embrace of curriculum design such as linking of CBL and PBL, but it also included their willingness to work on writing cases that stretched them beyond their comfort zones. In fact, the willingness of a core of the faculty to completely devote themselves to the writing of the curriculum was amazing."

Another junior faculty noted,

"I enjoyed this interactive development and implementation of the curriculum. I guess I don't know any other way. Everything I've ever done has been in collaboration

with somebody, I feel like. I thought at this level, no one would want to be the weak link, but I was a little surprised, but not entirely surprised that people didn't care if they were the weak link, on some level."

Strategies for coordination. Faculty used different strategies to navigate the collaboration and to coordinate efforts. Open communication was a key strategy as faculty noted that there is a "need to continue to communicate" and that it was important to be "open, direct, and very honest." Another said that she had to, "face people's pride and to let them know my opinion was not to offend them." One faculty member noted,

"... getting back and forth dialogue between the basic scientist and the clinicians was helpful in some regards. It presented challenges in others. Of course they (clinicians) have a good perspective as to what's important, what they (students) will need to know when they get out there and practice. I was fortunate, the co-director I had was very open."

Working well with others was important, and faculty adopted strategies to accomplish their course development. One said, "the collaboration has to be consistent." Another noted, "I think in an environment like this where it is so collaborative, people who don't work that way or can't work that way or don't know how to work that way naturally are going to self-select out." Another faculty took a different tactic saying, "I maneuvered myself to avoid people who weren't a team player." One clinician noted, "What I would put forward as content and he would kind of sift through his experience and make sure we were getting the basic science in and so on. It was a good collaboration."

Getting people from a variety of backgrounds to work together on a large project is almost always difficult.

"One of the challenges was to work together in a unified way with a common purpose. Many of the faculty had had no prior experience with teaching let alone course development. One of the real triumphs of the developmental process was to get all of the faculty to buy into the product that we were creating. We couldn't have done it without a great deal of trust and goodwill on the part of the faculty."

The course codirectors had to get faculty to agree on course content. It was difficult to determine the time and amount of information to cover in certain areas.

"Our biggest challenge was the perception of disciplines/fields that needed more coverage. This was true for people representing both science disciplines and clinical. Making sure in a two-year integrated curriculum that we're covering the material that needed to be covered. We had



to make sure topics were somewhere in the curriculum and in the appropriate place in the curriculum.”

Balancing responsibilities. Managing time, coordinating materials and information among several faculty for each course, and dealing with the small number of faculty during the start-up process were the areas where faculty struggled. As one faculty member shared, “There was [sic] not enough people. The demands on my time are immense. The demands on everybody’s time are immense. When you’re trying to collaborate, you’re getting a time where you can both meet with each other for an amount of time where you can do substantial work.”

While all the faculty expressed that they were fully involved in the curriculum development and implementation process, they talked about the sacrifices they made as well. The basic science faculty talked about taking valuable time away from their research and the impact on their projects, grants, and future of their research that being away would have. This was particularly difficult for the junior faculty, as one shared,

“That’s been a bit of a struggle, trying to find that balance of scholarly activity and teaching in a brand-new medical school that can’t really provide me the level of research infrastructure and support that I need to be very successful, and this integrated curriculum that doesn’t provide a steady amount of teaching over the course of a semester, as opposed to an undergraduate curriculum, let’s say, where I know that I’m going to be there every Monday, Wednesday, Friday, and I have my office hours. Your day is pretty much mapped out in terms of your teaching. You can always pick up another course if your research is falling behind a bit.”

Another lamented,

“We had to do a curriculum for two years and zero research. That kind of killed the whole research career. That’s a huge challenge for me, trying to get that back on track. I step out of curriculum where I can.”

Clinicians mentioned the strain that their time away from their practices imposed on their patients, colleagues, and staff. One clinician shared that it has

“... taken me off the schedule to cover these blocks of time that are important, from a course director’s standpoint. It has created some burden on my colleagues and partners. I’m a clinician. I’m a faculty. I love to teach. I love to see patients. I don’t need to be yanked from both ends. We need you here. We need you there. It creates a very uncomfortable situation for me, between me and my partners.”

Another noted that this strain extends beyond the practices associated with College of Medicine (CMED) and said,

“Clinicians all over the country, not just here at CMED, are being pressed to make money, and making money means being in the clinic and seeing patients, but I just think we have to watch and make sure that we value educational effort and commitment. I am extremely committed to the educational mission of the institution. I’m also extremely committed to my patients. It does make me feel sad that am going to be kind of forced away from the educational mission in order to produce more revenue on the clinical side.”

Hierarchy and power. Team dynamics emerge in almost any group situation, and faculty mentioned experiencing power exerted by some clinicians and navigating their roles as course co-directors in courses that required them to work with senior faculty members. While one faculty noted that the course co-director relationship “has to be an equal partnership,” others shared their realities. One basic scientist noted, “The tendency was, in many of the courses, to go along with the clinician, and they became dominant in dictating the direction of the courses.” He goes on to say that the student course evaluations indicated that there was too much clinical content and that the material wasn’t at their current level of training. Another faculty commented, “What was also challenging was this, people, especially senior people, have a plan. Like they have a direction, a way how they see things. It was very hard for me to make them understand and change that direction according to the need.”

And it was not always easy, as one faculty shared,

“Sometimes there were faculty members who didn’t want to play nice in the sandbox and who, quite frankly, didn’t get their materials in on time or didn’t act professionally when it came time to discuss and try to talk about how it could be better. They wouldn’t accept those kind of comments.”

With so few faculty responsible for multiple areas of the curriculum, it was difficult to gage the distribution of work. Some faculty felt that others were not taking on their fair share, and others felt that junior faculty were at a disadvantage. One junior faculty member commented, “I think the other challenge as a course director, being a junior faculty member, dealing with more senior faculty members. That was a little challenging, because of some of the hierarchical ideas people had, but it wasn’t insurmountable.”

Final reflections. The faculty were pleased with the feedback they heard about the curriculum from students, preceptors, and the community. When asked what surprised her about the curriculum development and implementation process, one clinician said, “How well, and how positive students perceived it. Again, it was a new concept even for me, because



when I went to medical school, we did not get taught this way. I was skeptical about it. We did it. I was very surprised by how well this was perceived.”

Faculty were also pleased to hear how well the students performed in the clinical settings. Students participated in early clinical experiences as part of the curriculum that included observing areas of rural practices and participating in basic clinical interactions with patients, and one faculty member noted,

“Being a new school, they (students) went through the first draft basically of our curriculum. I’m hearing from the coordinators that everybody absolutely loves the students, all of them. And they are asking, ‘When can they come back?’ ‘How come they can only be here for four hours?’ ‘Can they come for three days next time?’ ‘These are the brightest students I’ve ever seen. They’re so talented.’ I’m hearing all these amazing comments. I’m glad that it worked because even though this was new and we figured it out, we didn’t know it was going to turn out. They turned out just fine, extremely successful.”

The students also impressed the faculty, as one basic scientist noted,

“Seeing how amazing these people are on paper and then actually meeting them, they are brilliant people and they are committed to doing an amazing service for this region of Michigan. It blows me away. I never thought I’ve been a basic scientist for so many years, that I thought that that was going to be my focus. But when I get heavy in to teaching, it’s almost like a switch flips in my brain, and I become so focused on the students and their story and where they’re going that it’s exciting, and I almost feel like I’m doing more for the world. There’s more of a practical imprint that I’m making by teaching these students and affecting their lives, than by doing basic science research. Every student that I can graduate and teach microbiology to is going to go out there and help somebody, within my generation, rather than this esoteric research that I do.”

Many of the faculty shared final reflections on the process and the curriculum they developed.

One clinician said,

“I wish I would have learned in a way where they forced you to figure it out yourself and forced you to be active during those eight hours where you’re at school instead of just wasting eight hours. I think this is a good way to learn.”

A senior faculty member shared,

“The time spent and effort spent in working to develop the CMED curriculum has been the most rewarding single activity of my career. To have gotten a group of faculty

to work to a common goal despite disparate backgrounds and traditional perspectives was very rewarding.”

And a basic scientist commented,

“It has been really interesting being a part of designing a curriculum, and implementing and delivering content as a basic scientist, because you can see some real, practical changes in your community, in a very short time, compared to most research. I think that that has been the most impactful thing for me, in the last two and half years Just this change in perspective. I’m not just a researcher anymore.”

Conclusion

The faculty reflections on their experiences as course co-directors provide insights into the value of interdisciplinary teams in the curriculum development and implementation processes. Both basic scientists and clinicians noted how this collaborative model enhanced the processes by providing opportunities to engage with colleagues to draw on discipline specific expertise. Despite experiencing issues with competing institutional and clinical demands, the working relationships discussed were positive and beneficial, not only to this process but also as they continue their work in medical education. The experiences shared indicate that using basic science and clinical course co-directors can be an effective approach to curriculum design and implementation.

The first class of students at the College of Medicine at Central Michigan University completed their USMLE Step I exam with a 99% pass rate. This pass rate indicates that the faculty successfully met their initial task of developing an 18-month preclerkship curriculum that was objective-based, utilized patient- or community-focused cases, and integrated the foundational (basic) sciences and clinical sciences throughout the curriculum. Course evaluation reports and student feedback indicated that faculty were also successful in presenting the curriculum through multiple learner-centered, active instructional strategies in both large- and small-group sessions. For most courses, student comments also complimented the faculty on the overall organization of the courses and on how well the faculty worked together during the course.

As medical education programs continue to evolve, restructure, and integrate, the basic science and clinician course co-director model may prove to be an effective approach to ensure a comprehensive curriculum. Faculty who understand the importance of this collaborative process and who value the contributions of colleagues are key for a successful curriculum development and implementation.

Author Contributions

Conceived and designed the experiments: JMB, LCP. Analyzed the data: JMB, LCP. Wrote the first draft of the



manuscript: JMB. Contributed to the writing of the manuscript: LCP. Agree with the manuscript results and conclusions: JMB, LCP. Jointly developed the structure and arguments for the paper: JMB, LCP. Made critical revisions and approved final version: JMB, LCP. Both authors reviewed and approved of the final manuscript.

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