

Terminology in Continuing Education: A Hybrid Methodology for Improving the Use and Reporting of Interventions in Continuing Education

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Abstract: Researchers and leaders working in quality improvement and continuing education have a variety of interventions available to change clinician behavior and to improve patient outcomes. Evidence from systematic reviews and meta-analyses of such interventions is often mixed, with methodological weaknesses contributing to challenges in summarizing and interpreting evidence. Confusion and inconsistency surrounding many of the terms contributes to this challenge. This international study was commissioned by the Society for Academic Continuing Medical Education to use expert opinion to improve the consistency of important educational terminology by describing the essential components of a set of educational interventions, such as educational meetings. This article will describe how this project uses the literature and an expert consensus process to improve precision around the conceptualization and implementation of educational interventions. This article will offer an in-depth description of a hybrid methodology that blends the Chaffee framework for concept explication with a modified Delphi technique that constitutes a novel expert consensus process. This article concludes with recommendations for other scholars replicating this process.

Keywords: educational meetings, continuing education, continuing medical education, conferences, innovative educational interventions, interprofessional education, knowledge translation, quality improvement

DOI: 10.1097/CEH.000000000000014

Researchers and leaders working in quality improvement and continuing education (CE) have a variety of interventions available to change clinician behavior and improve patient outcomes. Evidence from systematic reviews and meta-analyses of such interventions is often mixed, with methodological weaknesses contributing to challenges in summarizing and interpreting evidence. Confusion and inconsistency surrounding many of the terms contribute to this challenge. This lack of standardized terminology also makes evaluating CE interventions difficult.¹ Many authors have expressed the view that accurate, complete, and consistent descriptions of educational interventions are required to advance the CE field.¹⁻⁴

The Society for Academic Continuing Medical Education (SACME) commissioned this project to address the misuse, and lack of clarity surrounding, CE interventions. A previous SACME-funded study developed a list of 45 problematic terms within the CE field. Focus group participants commented that there were many challenges surrounding incongruent definitions of CE terminology, and such inconsistencies impacted decision-making.⁵ Participants tended to seek definitions from international organizations rather than from institutions, which lack any sort of glossary or standardized definitions.⁵

The purpose of this project was to develop a framework for communicating guidelines to support educational research and practice, creating precision around the guideline descriptions of educational interventions. Four common interventions in CE were identified and reviewed, including performance measurement and feedback,⁶ practice facilitation,⁷ educational meetings,⁸ and interprofessional education (IPE).⁹ This project used a modified Chaffee framework for concept explication¹⁰ blended with a modified Delphi technique.¹¹ This article sets out to describe the novel methodology and approach that was developed to create precision around the conceptualization and implementation of educational interventions.

The article is organized as follows. First, we provide the theoretical framework for this hybrid methodology. We then offer an in-depth description of this methodology by going through the framework step-by-step. We conclude by offering suggestions for those who wish to apply it.

Disclosures: The authors report the Society for Academic Continuing Medical Education (SACME) commissioned the project with funding from Pfizer, Inc. The views expressed in this article are those of the authors and not necessarily those of SACME or Pfizer, Inc. The authors declare no conflict of interest.

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THEORETICAL FRAMEWORK

A Delphi–Chaffee hybrid methodology was developed to improve the consistency of important educational terminology through best evidence and expert consensus. Its overall structure is guided by a modified framework for *concept explication*¹⁰ developed by communication scholar Steven Chaffee.¹⁰ Concept explication is “the intellectual process that links (communication) activities to broad propositions about communication.” This process links theory to empirical research, strengthening the connections between theory, observation, and research.¹⁰ Through this process, experts are able to communicate more precisely by having an explicit shared understanding of the concept. Additionally, Chaffee¹⁰ contends that “explication should tell us, among other things, the extent to which we are falling short of studying what we really intend.” The framework includes nine steps, each containing a number of suggested questions and points for consideration to guide the process of concept explication.

The other key aspect of this novel methodology is a modified Delphi technique. The Delphi technique is a virtual survey strategy to generate discussion. This approach was used as the primary mechanism to drive the data collection process with a group of experts while minimizing nonproductive group dynamics.¹² The Delphi technique is a widely accepted communication process for “achieving convergence of opinion concerning real-world knowledge solicited from experts within a certain topic area.”¹¹ Unlike other survey methods, multiple iterations of the survey are used to achieve consensus on specific items.¹¹ Participants receive an individual report with their responses compared with the aggregate group response, which allows them to reconsider their initial judgments and to change their answers if they wish.¹¹ Previous research indicates that three iterations of the survey are usually sufficient to reach consensus, if it is achievable, although three are not a limit by any means.^{11,13–17}

Within this study, the Delphi technique was modified to include a single group of experts within the CE field rather than having a different group of experts for each intervention. The rationale for this being that the CE research culture has its own history and approach. Experts in CE would have insight into the field’s epistemic culture,^{18,19} or “the practices and beliefs that form a culture’s attitude toward knowledge and its means of justifying knowledge claims.”¹⁹ Additionally, we believed that a consistent group of experts across four cycles would facilitate interinstitutional collaboration among a group of leaders and scholars in the field.

METHODOLOGICAL FRAMEWORK

The 14-month project consisted of four cycles each lasting 3 months. Each cycle focused on one educational intervention. The project also included a month at the beginning and at the end for administrative tasks and writing.

We modified the Chaffee framework to address steps 1 to 6 of the 9-step framework. The last three steps were eliminated because they pertain to operationalization and evaluation, which were beyond the scope of this project. We have also included an additional 1-time step at the beginning of the project to set up the Delphi process. This resulted in a 7-step framework, with steps 2 to 7 being repeated in each cycle.

Framework Step 1: Formation of the Expert Advisory Committee

Participant Selection

Nine individuals were initially invited to join the expert advisory committee because they were either known by the principal investigators or by the SACME Board of Directors to be leaders within CE in North America. Eight individuals agreed to participate, and one person did not respond to two email invitations. Snowball sampling²⁰ was used to expand the number of experts involved, as the Delphi technique typically involves 15 to 20 experts.¹⁶ Eighteen additional individuals were identified and subsequently invited. Of these, nine accepted the invitation, three declined citing heavy workload, and six did not respond. This brought the expert group to 17 for the first cycle. An additional person joined at the start of the second cycle at the request of the SACME Board, bringing the membership to 18 for the remaining three cycles. As an incentive, the experts were offered authorship on each guideline and any article arising from the guideline, providing that they met journal authorship criteria and actively participated throughout the cycle.

Description of the Expert Advisory Committee

In this study, the experts were researchers or leaders in the field of CE. Nearly all (94%) had authored one or more peer-reviewed publications within the past 2 years of starting the project, and most (67%) held positions within health professions education departments within their institutions. Members represented a wide variety of academic institutions and hospitals from across the United States (61%) and Canada (39%). Many (83%) were current members of SACME, whereas some (17%) were not. All members held a graduate degree. Some members (39%) had one or two master’s degrees, and virtually all (94%) had at least one doctoral degree in medicine, education, or other fields.

Internal Team Expertise

The internal project team brought a variety of expertise to the project, thereby comprising a second group of experts. Dr. Van Hoof (Co-Principal Investigator, University of Connecticut) is a psychiatrist with a doctoral degree in education. He has a background in quality improvement and health professions education, and he has published broadly on the use of educational interventions to change clinician behavior. Dr. Kitto (Co-Principal Investigator, University of Ottawa) is a medical sociologist who studies how structural, historical, and sociocultural variables shape interprofessional clinical practice, educational settings, and activities. In essence, Dr. Kitto is an expert in the ways in which context shapes CE. The research staff came from different professional backgrounds, enhancing the project team’s overall interprofessional expertise. The project was managed by Ms. Grant (Research Associate, University of Toronto) who is a registered nurse with a Master of Nursing in Leadership in Education. Ms. Miller (Research Assistant, University of Connecticut) is also a registered nurse who has conducted previous research on educational outreach. Ms. Sajdowska (Research Assistant, University of Connecticut) is a master’s student with a background in Allied Health and has experience conducting systematic reviews.

Framework Step 2: Identify the Focal Concept, Including Its Planned Use

Identifying a focal concept involved selecting a single educational intervention and assigning it a tentative name.¹⁰ Three sources provided a list of interventions for consideration: the report from stage 1 of the SACME Terminology and Typology Project, published systematic reviews in MEDLINE and Cochrane, and input from the expert advisory committee. The list of possible interventions was narrowed based on discussions within the team and with the expert group resulting in four interventions: *performance measurement and feedback*, *practice facilitation*, *educational meetings*, and *IPE*.

Framework Step 3: Literature Search

Using MEDLINE and Cochrane, a literature search was conducted to identify articles published in the past 5 years about each educational intervention. The Chaffee¹⁰ framework suggests that the literature search includes literature that uses the same name tentatively selected by the researchers and other terms that may be used to describe the same concept. Researchers should also consider articles on the periphery of the body of literature under review. Table 1 lists Chaffee questions the team used to identify articles.

Framework Step 4: Processing the Literature

When processing the literature, it is important to remain focused only on the literature that is relevant to the concept under scrutiny, although the body of literature found during the literature review may extend well beyond the concept. In synthesizing the literature, particular attention should be paid to meanings, operational definitions, and empirical findings. Chaffee¹⁰ also suggests that it is valuable to make note of contextual factors found in empirical studies.

The project team identified the most relevant set of articles, always including the most recent systematic review. The team made the articles available to the Expert Advisory Committee for review and recommendations in a shared folder. At the beginning of each cycle, a non-Delphi survey was sent to the expert group to inquire about additional recommendations, which were assessed by the principal investigators for relevance and added to the initial set of articles.

Framework Step 5: Formulate a Normative Definition

This study used a modified Delphi technique to use expert consensus to evaluate the existing literature on each educational intervention. Synthesizing the best available literature and obtaining expert consensus allowed for the formulation of a normative definition and key characteristics for each educational intervention.

Obtaining Expert Consensus

Within this study, the Delphi process consisted of experts providing responses to iterative surveys driven by the literature review. The internal team crafted a survey to elicit the experts' feedback on elements of the literature identified in the previous step, such as the best definition and key characteristics. The expert advisory group was engaged in the Delphi process through a modified Dillman approach, also known as the tailored design method.²¹ This approach has been found to be effective in obtaining higher response rates from physicians (a challenging group from which to achieve high response rates²¹), who comprised over half of the experts in this study. The approach was modified to accommodate the frequent deadlines and rapid turn-around, and also the electronic rather than article-based surveys. The Project Manager (R.E.G.) sent the link to the online surveys on a consistent day of the week throughout the cycles so that the experts would know when to expect the survey. The survey would consistently close 1 week after becoming available. Multiple reminders were sent as per the Dillman approach²¹ because the Delphi method does not allow nonresponders to progress to the next survey. Three days after the initial invitation, the Project Manager sent a reminder email to any experts who had not yet responded. Three days later, the principal investigators sent a second reminder to any nonresponders in what Hoddinott and Bass²² describe as a *last-ditch* effort to encourage remaining members to participate. All reminders were personalized to the recipient and came from consistent institutional email addresses. The response rates can be viewed in Table 2. Response rates were calculated based on the number of Expert Advisory Committee members participating in each individual survey, and also over each cycle and the project as a whole.

On closing the survey, the research staff created an anonymous report of the aggregate results and shared the report with the project team. A controlled feedback process with anonymity allowed the internal project team to control any manipulation or coercion by dominant individuals or general group pressure.¹¹ Individual responses were only viewed by the Project Manager and the Research Assistant (N.E.M. or J.S.) who created the individual reports that were sent to each expert. These individual reports consisted of the aggregate results with that particular expert's responses highlighted so they could reconsider their most recent choices in light of the aggregate results. Experts could only view their own comments. Those who did not respond were unable to progress to the following round.

Defining Consensus

In the literature, there is no prescriptive value that is considered to be "consensus." The most recent literature shows

TABLE 1.
Questions to Help Examine the Literature

Conceptual meaning	What are the different conceptual meanings that have been assigned to this term, and what (if any) are their research purposes? What confusions do these ambiguities cause?
Operational definitions	What are the different operational definitions that have been used? Which research purposes do they serve? Which of these are related to our purposes?
Names for operational definitions	What are the usual names for these operational definitions? Are different names needed to make differences in meaning clear?
Promising definitions	What, considering its intended research purpose, seem to be the most promising definitions of the concept?

Adapted from Chaffee,¹⁰ p. 19.

TABLE 2.
Delphi Survey Response Rates

Delphi Surveys		Response Rate 0–2 d After Initial Mail Out, %	Response Rate After First Reminder, %	Response Rate After Second Reminder, %
Cycle 1	Survey 1	11.8	47.1	94.1
	Survey 2	12.5	50.0	100
	Survey 3	62.5	93.8	100
	Overall response rate for cycle 1	94.1		
Cycle 2	Survey 1	22.2	38.9	94.4
	Survey 2	17.6	35.3	94.1
	Survey 3	18.8	43.8	87.5
	Overall response rate for cycle 2	77.8		
Cycle 3	Survey 1	44.4	66.7	88.9
	Survey 2	37.5	68.8	93.8
	Survey 3	33.3	66.7	93.3
	Overall response rate for cycle 3	77.8		
Cycle 4	Survey 1	33.3	44.4	100
	Survey 2	27.8	61.1	100
	Survey 3	50.0	83.3	100
	Overall response rate for cycle 4	100		

the consensus threshold ranging from 50 to 86.6% (Table 3). As such, the team operationally defined consensus as $\geq 70\%$ on a single response option or $\geq 80\%$ on two adjacent response options at either end of the Likert scale (e.g., 86% of respondents agreeing that a characteristic was either “important” or “essential” would be considered consensus).

Framework Step 6: Guideline Development

A guideline for each educational intervention was developed from the findings from step 4. In the absence of a published format for education guidelines, the team developed an idiosyncratic set of categories that reflected the Chaffee framework but was also practical. Major subject headings include *description*, *operationalization*, *evidence*, and *for more information*. The questions asked under major subject heading can be viewed in Table 4.

Framework Step 7: Revision

Experts from the advisory group who completed the Delphi-informed surveys were given 1 week to provide feedback on a draft guideline. We revised the guideline before sending it for review by the SACME Board of Directors, and offered to meet with the Board to discuss the findings and answer any questions it may have. The final guideline informed a article about each intervention.

DISCUSSION

The hybrid methodology we have presented in this article draws on Chaffee’s framework for concept explication¹⁰ blended with the Delphi technique.¹¹ The melding of these methodologies formed a 7-step model to improve the consistency of important educational terminology through best evidence and expert consensus. Feedback received from the expert advisory committee

TABLE 3.
Delphi Technique: Consensus and Response Rates

Study	Consensus Cutoff/Aim	Response Rates			
		Cycle 1, %	Cycle 2, %	Cycle 3, %	Cycle 4, %
Iagnocco et al, 2014	>75%	85.2	78.3	88.9	
Lima-Rodríguez et al, 2013	Mean score ≥ 3.5 , median ≥ 3 , high ratings $\geq 80\%$, and or SD ≤ 0.90	83.3	80		
Carratalá-Munuera et al, 2013	63.4% (95% CI: 48.7–78.1%) in medicine, and 78.1% (95% CI: 65.4–90.8) in nursing ($P > 0.05$); overall level of agreement: Kappa = 0.43 ($\chi^2 = 2.5$, $P > 0.05$)	65			
Beehler et al, 2013	80%	88	86	100	
Wong et al, 2013	Not specified	Not listed	93	89	
Tonni and Oliver, 2013	55	77.8	77.8		
Domeisen Benedetti et al, 2013	50%	100	100	72	
Finney et al, 2013	80%	65	50		
O’Connell and Gardner, 2012	80%	100	75		
Mirsadraee et al, 2012	65%	25	22	31	61
Tetzlaff et al, 2012	78%	88–93*	88–93*	88–93*	
Pope et al, 2012	86.6%	45			

*Article only states that “Response rates were between 88% and 93% per round.”

TABLE 4.
Guideline Subject Headings and Questions

Subject Headings	Questions
Description	What is (name of intervention)? What is the best published description of (intervention)? What other terms do people use to describe (intervention)? What are some interventions that may be confused with (intervention)? What are some important characteristics of (intervention)?
Operationalization	How is (intervention) thought to work? Under what circumstances should one consider using (intervention)? What other interventions complement (intervention)?
Evidence	What is the evidence associated with (intervention's) effectiveness? What are some best practices associated with (intervention)? What are some important research issues concerning (intervention)?
For more information	Where can I learn more about (intervention)?

(solicited and unsolicited) about the importance of doing terminology work was positive. Additional informal feedback indicated that some of the experts discussed the survey content among themselves—a discussion they indicated that they normally might not have had with their peers. In this regard, the process of engaging in this project facilitated additional inter-institutional collaboration beyond what was originally intended.

Important lessons during the conduct of the hybrid methodology revealed particular logistic and incentive issues of which future users need to be mindful. Throughout the study, we closely monitored participation rates for signs of “expert fatigue.” There was particular concern about overwhelming the experts—all volunteers—with emails and requests. Although we did not see evidence of fatigue, we recommend that future researchers using this methodology should consider increasing the amount of time in between surveys. Participation rates can also be increased through incentives; e.g., gift cards to a bookstore.²¹ If there is an absence of financial resources, the experts should be acknowledged or should coauthor any academic output as an incentive. In our experience, guideline and article acknowledgment or authorship was a positive motivating factor to retain active participation of group members.

The most successful cycle of response rates was cycle 4, which focused on IPE. We believe that this may be the result of two different, but related factors. First, the high response rate may be due to the timeliness of this intervention. IPE is increasingly being discussed as an important intervention within a rapidly increasing number of published studies about IPE in the undergraduate, graduate, and CE literature.²³ The Expert Advisory Group may also have been more familiar with this intervention because of the increased emphasis on IPE in health care more broadly. The second and perhaps most likely reason is that IPE was selected with 100% consensus by the expert group to be the fourth intervention, which may be due to this intervention's current popularity. The experts may have been more interested in the IPE cycle because of the strength of their agreement on the IPE cycle, although they were consulted on and approved the three other interventions. Previous research on questionnaires has found that there is a much greater chance of getting responses if participants deem the topic to be *interesting*.^{24,25} Future studies of this nature may want to consider having the intervention selection be driven by their expert group as much as possible.

Researchers undertaking this work may also want to include more of an interprofessional focus. A key CE journal editor in

health professions education and one major professional CE organization have recently commented on the increasing focus on IPE in continuing education within the health professions.^{26,27} Although IPE was one of the interventions under examination, this project as a whole was geared more toward continuing *medical* education. Future groups may want to pursue this line of inquiry by focusing on clarifying terminology as it pertains to continuing IPE or other health and social care professions. This could be manifested through more interprofessional interventions, searching journals from different health and social service professions, and purposefully forming an interprofessional expert group.

CONCLUSION

Previous work suggests that precision around the descriptions of CE interventions is vital to advancing the CE field.¹⁻⁴ The lack of standardization creates confusion and inconsistencies, and also making it difficult to evaluate CE interventions.¹ This article presented a novel hybrid methodology for communicating guidelines to support educational research and practice, and also for creating precision around descriptions of educational interventions. Researchers undertaking this kind of work should use strategies to maintain high response rates, such as offering incentives (financial or academic capital) and monitoring for “expert fatigue.” Additionally, we found that participation rates were highest when the expert group was allowed to select an intervention that interested them. Future work should be more inclusive of other fields (beyond medicine) and strive for a more interprofessional focus.

Lessons for Practice

- The use of precise and consistent descriptions of educational terminology is important to implementing and evaluating CE interventions.
- This hybrid methodology can be used to create precision around the description of educational interventions in practice and research.
- Researchers may be able to increase response rates through incentives (financial or academic capital) and by involving the participants in selecting a topic they find interesting.
- Leaders and researchers should engage in discussion surrounding the clarification and standardization of CE terminology.

ACKNOWLEDGMENTS

SACME thank the Co-Principal Investigators, Thomas J. Van Hoof, MD, EdD and Simon Kitto, PhD; the Project Manager, Rachel E. Grant, RN, BScN, MN; and the Research Assistants, Joanna Sajdlowska and Nicole E. Miller, for their leadership and expertise on this project. In addition, the authors thank the members of the Expert Advisory Committee for their valuable contributions.

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