

Deriving criteria by which to determine core curriculum content: A high engagement process

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Background. During curriculum revision, an important task is identifying a core curriculum. Deciding what criteria to use to determine core content is crucial and impacts on graduate outcomes and patient care.

Objective. To identify criteria to apply in order to determine core content.

Methods. A high engagement process involving eleven staff and two undergraduate student representatives was used. The process consisted of a stimulus question; brainstorming; sharing, clarification and clustering of ideas; second-phase brainstorming, clarification and clustering; prioritisation; and finally vote tally and categorisation.

Results. The group initially identified 28 criteria to use when deciding on core content. The criteria were reduced stepwise to 15, and finally 3 criteria that enjoyed widespread support were identified. Content would be included in the curriculum if: (i) it was relevant to the South African context; (ii) it would ensure safe and effective practice by first-line practitioners; and (iii) it was evidence-based.

Conclusion. The process lends itself to the participation of multiple stakeholders in an engaging yet anonymous manner. It helps ensure that all voices are heard and ideas included in prioritisation. The process easily manages a multiplicity of ideas; similar ideas are efficiently identified and clustered. Finally, the process is time-efficient.

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When revising a curriculum, a common task is identifying a core curriculum.^[1,2] Curriculum designers are confronted with an array of new things that beg for inclusion in contemporary health professions education curricula.^[3,4] An ever-expanding knowledge base provides an enticing and growing menu of content to include. Professions, and the health profile of communities they serve, change over time. Ideas like graduate attributes, interprofessional education and social accountability are propagated.^[5] This places ongoing pressure on those entrusted with managing the curriculum. Is the curriculum relevant? Can graduates be prepared, in the time available, to tackle the challenges they will face?

The expansion of new knowledge and a greater understanding of existing knowledge have characterised the coming of age of physiotherapy as a profession. Since first being published online in 1999, the number of randomised controlled trials (RCTs) indexed in the physiotherapy evidence-base database (PEDro) have doubled every 3 - 5 years.^[6] In 2010 it was calculated that 18 000 RCTs and 3 500 systematic reviews of RCTs were indexed in PEDro. It has been argued that with the expansion of information, knowledge should be greater and practice should be more effective.^[7]

As regards changing population healthcare needs, the World Health Organization (WHO) has highlighted the increased prevalence of lifestyle-associated diseases.^[8] Within the context of global economic changes the expectation is that the prevalence of these diseases is also likely to increase in the developing world, while the impact of infectious diseases (like HIV infection, tuberculosis and malaria) is still worrying. Some have argued that this change in disease profile necessitates a realignment of physiotherapy practice^[9] and consequently the education of therapists. These changes are forcing expansion of the scope of physiotherapy practice.

However, the time available to teach physiotherapy-specific skills and knowledge at an undergraduate level is limited.^[10] The South African Qualifications Authority (SAQA) requires that 4-year bachelor degrees be limited to 480 credits, where one credit equals 10 notional hours. There are thus 1 200 hours available per year for students to attend structured academic activities, study, and complete assignments and assessments. This includes a minimum of 1 000 hours for clinical training that is mandated over the 4-year period. Facilitating the development of critical cross-field outcomes in higher education and generic graduate attributes of healthcare professionals is also increasingly being recognised,^[5] and therefore requires dedicated time. Another challenge faced by physiotherapy curriculum designers in South Africa, is that entry-level programmes are required to deliver professionals who can practise as unsupervised first-line practitioners on graduation.^[11] This is in contrast to professions like medicine, accountancy and law, where graduates have to complete a supervised internship before assuming an independent professional role.

All of the factors outlined above directly challenge curriculum content. One approach to managing these competing demands is the identification of a core curriculum. The concept of a core curriculum is not new.^[12,13] Various reasons have been advanced for adopting a core curriculum; prime among these is content overload, which has a negative influence on the quality of student learning:

'Students haven't forgotten, they never learned that which we assumed they had. In demanding coverage of a broad landscape of material, we often win the battle but lose the war. We expose the students to the material and prepare them for the tests, but we don't allow them to learn the concepts.'^[14]

The very idea of 'core' implies criteria by which content is determined to be core or not, yet deciding what those criteria are and applying them is not straightforward.^[15] Various methods have been described to determine core content. These include the use of document analysis,^[16] questionnaires,^[2,17] the Delphi technique^[3] and interdisciplinary or inter-institutional working groups.^[18,19]

Given the potential impact on graduates of these judgments, deciding what criteria should be used to determine core content is crucial. Furthermore, if the process of determining and applying these criteria is alienating to some lecturers, the likelihood is that the resultant curriculum will not be fully implemented as planned.^[1] When the undergraduate physiotherapy curriculum at Stellenbosch University (SU) was revised, the decision was therefore taken to use a consensus-building process to determine criteria to apply to determine core content. Three consensus-building processes have been described in the healthcare context. These include the nominal group technique (NGT), the Delphi process and a consensus development conference.^[20] These structured methodologies attempt to overcome issues associated with group decision-making processes by allowing all participants to contribute to the discussion. The aim of this paper is to describe the high engagement process we used to reach consensus.

Methods

Participants

All full-time staff members of the physiotherapy division at SU in 2006 were invited to participate. In addition two final-year students who were elected members of the undergraduate programme committee were also invited. The reason for limiting participation was twofold: (i) during a major curriculum update in 1999 the structure and content of the physiotherapy curriculum were renewed after consultation with key stakeholders including clinicians, students and multidisciplinary team members; and (ii) time and financial constraints precluded the advocated involvement^[1,21] of role players outside of the university. The renewal of the curriculum included an update of the content, and organisation of the curriculum within the existing structure.

Process

An institutional staff member from the university's Centre for Teaching and Learning facilitated the session. The facilitator holds qualifications in medicine and higher education and was trained in the Participan process.^[19] This process was adopted as it allowed full, anonymous participation from all group members. It also allowed visual display of all ideas, thus ensuring that at the stage of prioritisation, all ideas were visible for consideration. Power differentials in the group, e.g. between senior and junior staff, and between students and staff, were thus diminished. Furthermore, no single member of the group could dominate discussions and steer the outcome in a particular direction. The outcome of the process therefore represented the opinion of the group rather than any one or two persuasive, articulate and powerful members of the group.

A six-step process was used. In preparation for the session, large sheets of paper were affixed to the wall of the venue. Participant contributions, written on sheets from small note pads, were subsequently attached to these display sheets.

Step 1. Stimulus question

The following open-ended question was posed to all participants: Which criteria will we use to define the core content of the revised curriculum? The question was posed verbally and a printed version was attached to one of the display sheets against the wall.

Step 2. Brainstorming

Participants were afforded the opportunity to brainstorm ideas and jot their ideas down on small note pads. This step was completed individually by all participants in silence. Participants were instructed to write each idea on a separate page.

Step 3. Sharing, clarification and clustering of ideas

Participants were each invited to select three ideas they felt particularly strongly about. The selected pages were handed to the facilitator. The facilitator read each idea aloud. Participants then guided the placement of the ideas on the display sheets. If an idea was similar to an idea already displayed, it was placed touching that idea. If an idea was new, it was placed separately.

Table 1. Profile of participants

| | Area of interest | Highest qualification | Experience (clinician, years) | Experience (academic, years) |
|-----------|--|-----------------------|-------------------------------|------------------------------|
| 1 | Cardiopulmonary | MSc | 14 | 9 |
| 2 | Paediatric neurology | BSc Hons | 7 | 11 |
| 3 | Orthopaedics; sport injuries | MSc | 6 | 27 |
| 4 | Orthopaedics | BSc | 10 | 7 |
| 5 | Orthopaedics; neuro-musculoskeletal | M Phil | 10 | 7 |
| 6 | Adult neurology | Diploma | 25 | 12 |
| 7 | Orthopaedics | PhD | 10 | 7 |
| 8 | Orthopaedics | BSc | 7 | 2 |
| 9 | Community health; paediatric neurology | MSc | 13 | 13 |
| 10 | Paediatric neurology; exercise | MSc | 7 | 11 |
| 11 | Orthopaedics; biomechanics | MSc | 10 | 7 |
| Student 1 | Completed fourth year | | | |
| Student 2 | Completed third year | | | |
| Mean (SD) | | | 10.82 (5.35) | 10.27 (6.36) |

Participants were invited to comment on or interrogate any ideas that were displayed, as well as question how the clusters of ideas were being developed. In some instances, clusters of ideas were separated into two or more clusters when it became evident that similar but distinct ideas had been incorporated in a cluster. In other instances, two separate clusters were merged when it became apparent that they related to the same idea.

During this process, there was no onus on the participant whose idea was under discussion to take ownership of the idea. Anonymity of contributions was thus preserved.

Step 4. Second-phase brainstorming, clarification and clustering

After all first-round ideas had been placed, participants were afforded the opportunity to select any further ideas they had written down and that were not already represented on the display sheets for discussion and placement. Participants could also write down and submit new ideas. Step three was then repeated.

Step 5. Prioritisation

Participants were each given three adhesive dots with which to vote. Each cluster of ideas was numbered and participants selected the three clusters they wished to vote for. Participants then stuck their dots to the label identifying each cluster they wished to vote for.

Step 6. Vote tally and categorisation

Votes were tallied to identify the criteria enjoying most support. These criteria were subsequently grouped into categories to yield the final set of criteria to be used for the determination of core content for the revised curriculum.

Results

Eleven staff members and two students participated in this process. Participants had a mean (standard deviation (SD)) 10.82 (5.35) number of

Table 2. Results of the six-step process*

| Steps 2 - 4: Criteria identified by participants | Step 5: Prioritisation n=13 (%) | Step 6: Categorisation | Step 6: Final tally (total votes) n=39 |
|---|------------------------------------|---|---|
| Relevant | | | |
| Appropriate to ... [SA] [SA] context | 7 (53.8) | Relevant to [SA] context | 14 (33.3) |
| Driven by needs → [HPCSA]??? Official national health plan | | | |
| Requirements of practice | 7 (53.8) | | |
| Prevalent pathology | 0 | | |
| Patient numbers | 0 | | |
| Health structures | 0 | | |
| Safe and effective and an adequate amount of techniques to treat a patient appropriately in SA and internationally | 7 (53.8) | Minimum skills needed for effective, safe and relevant physiotherapy practice | 13 (33.3) |
| Identify the patient that you can help | | | |
| Evaluate↑↑↑; plan ↑↑; do ↑ (hands-on, or refer) | 7 (53.8) | | |
| Refers to the extent of training: students need to be equipped with skills related to evaluation, planning and management | | | |
| Research findings | | | |
| Evidence-based | | Evidence-based | 8 (20.5) |
| 'Evidence' – knowledge or practical | 9 (69.2) | | |
| Evidence-based techniques | | | |
| Evidence-based levels | | | |
| Core knowledge on which physiotherapy science is based | | Minimum building blocks needed | 4 (10.2) |
| Basic principles | 5 (38.5) | | |
| Building blocks basic/base concepts and principles | | | |
| Definition of physiotherapy: role as described by the HPCSA | 0 | Other | |
| Clinical value based on expert opinion | 0 | | |
| Selected techniques ↑↑↑ – basic knowledge of others. Develop other opportunities to expand technique base | 0 | | |
| Level of the student | 0 | | |
| International | 0 | | |
| What is needed to reach the newly defined profile of the Stellenbosch graduate | 0 | | |

SA = South Africa; HPCSA = Health Professions Council of South Africa.

*Ideas submitted by respondents are reported verbatim.

years' experience as clinicians and 10.27 (6.36) number of years in academia. The profiles of participants are depicted in Table 1.

The group initially identified 28 potential criteria to be used when deciding on core content (Step 3) (Table 2). After Step 4, 15 criteria remained. Following the voting process (Step 5) and categorising of the criteria, 3 criteria were identified to be used to determine the core curriculum (Table 2). The process took 2 hours from start to finish.

Discussion

Through a high engagement process, we identified 3 essential criteria deemed appropriate for determining the core content of a revised undergraduate physiotherapy curriculum that enjoyed widespread support among participants. Content would be included in the curriculum if: (i) it was relevant to the South African context; (ii) it would ensure safe and effective practice by first-line practitioners; and (iii) it was evidence-based.

The high engagement process we used has not been widely documented in literature, but is similar in some respects to the NGT.^[22] The advantages and drawbacks of the process may therefore be similar to those of the NGT. One distinct advantage of the process described here is that it is very efficient. It could be argued that the degree of challenge posed by a process of reaching consensus within one department is insignificant compared with that of reaching consensus across multiple departments as would be the case in, say, a medical curriculum. However, the process lends itself to the participation of multiple stakeholders in an engaging yet anonymous manner. It helps ensure that all voices are heard and included in prioritisation. We therefore believe that the process would be effective even under more complex circumstances.

The generation of too many ideas during the initial process of brainstorming when using the NGT can pose challenges to participants and facilitators.^[20,23] In contrast, the Participan process easily manages a multiplicity of ideas, and duplicate ideas are efficiently identified and clustered as part of the process. Almost half the ideas generated during the brainstorming phase were duplications. This could be an indication that group members were too similar in their thought processes, although as indicated in Table 1, all participants had extensive experience both as clinicians in different fields and as academics. Nonetheless, the ideas generated may not represent those of a broader group.^[22] On the one hand, this could have been countered by involving physiotherapists from other institutions and stakeholders from outside of physiotherapy. Subsequent validation of the results of this process by obtaining feedback from stakeholders like students, clinicians and employers could also have addressed this issue. However, as mentioned, resource limitations precluded this eventuality. Furthermore, the goal of this work is to describe the process used. We hope that by publishing our process and outcome we can stimulate conversation and debate around the important question of which criteria should be used to identify core content for undergraduate physiotherapy training.

While the NGT has been promoted as a way of reaching consensus, this view is not always supported in the literature.^[22] In our case, the process adopted did facilitate attainment of consensus in the group. Group members only voted for 6 of the 15 potential criteria during Step 5; with 1 criterion receiving majority support (evidence-based). We hypothesise that this was because the group decided to retain some criteria as distinct criteria despite apparent similarities. After voting was completed, the group was happy to group similar criteria during

a categorisation process (Step 6). This process clarified the various dimensions of each criterion. The process allowed for all views to be considered equally. The 3 criteria that we ultimately decided on received 89.7% ($n=39$) of all possible votes.

Given the limitations identified above, what of the validity of the criteria identified? Although the purpose of this paper is to describe the process used rather than the results obtained, we believe there is a case to be made for the validity of the criteria identified. Firstly, regarding relevance to the local context, the importance of producing therapists who can address the healthcare needs of specific communities is increasingly being recognised and encouraged. Physiotherapy is an internationally recognised profession and graduates are encouraged to travel abroad. While there are generic skills that define physiotherapy, the scope of physiotherapy practice varies across contexts. The importance of developing curricula which are relevant to the health and social needs of each particular nation was acknowledged in the World Confederation of Physical Therapy (WCPT) guideline (2012) for physical therapist professional entry-level education.^[24]

Regarding the criterion that core content should ensure safe and effective practice by first-line practitioners, a first-line practitioner within the South African context has been defined as:

‘... a person who can make an independent diagnosis and can treat such a condition, provided it falls within his/her scope of practice. Should the condition fall outside of their scope of practice, this practitioner will refer on. This person is autonomous in professional decision-making. It is acknowledged that with “first line practitioner status” come accountability and legal responsibilities.’^[11]

Although this definition was only published 6 years after we embarked on identifying core content, the definition validates the group's decision to ensure that the core curriculum includes knowledge and skills which will enable students to identify patients who would benefit from physiotherapy intervention. In the revised curriculum greater emphasis was thus placed on evaluation techniques and students' ability to formulate a differential diagnosis, and less on treatment techniques. A number of physiotherapy techniques can be used both for evaluation and management of conditions. However, this is not always the case. The implication of this decision is that students may not always have the necessary skills to address the patients' problems efficiently and optimally. The decision to equip students with the ability to accurately identify patients' problems at the expense of optimal management at first contact was regarded as the lesser of two evils. Our physiotherapy division is currently consulting with relevant stakeholders (universities, clinicians, employers) regarding our revised curriculum to develop innovative collaborative strategies to address this potential shortcoming in our students' training.

Finally, regarding evidence-based practice, in a policy statement the WCPT^[25] has endorsed the concept of evidence-based physiotherapy practice. The importance of developing educational strategies which would ensure the development of the necessary skills for evidence-based practice in entry-level practitioners has also been advocated.^[7]

It is evident from the policies and documents published since we embarked on this process, that the decisions we made find support internationally. We argue that the high engagement process we used to decide on criteria for a core curriculum facilitated the quality of the decisions made. The effect of these decisions on the quality and ability of the therapists produced will need to be investigated.

Conclusion

Through a six-step high engagement process we identified 3 criteria which were used to determine the core content of a revised physiotherapy curriculum. The process lends itself to the participation of multiple stakeholders in an engaging yet anonymous manner. It helps to ensure that all voices are heard and ideas included in prioritisation. The process easily manages a multiplicity of ideas; duplicate ideas are efficiently identified and clustered. Finally, the process is time-efficient; the process described above took 2 hours from start to finish. Content was included in the curriculum if: (i) it was relevant to the South African context; (ii) it would ensure safe and effective practice by first-line practitioners; and (iii) it was evidence-based. These criteria are offered for critical reflection and as a basis for a national (or international) debate on core content of a physiotherapy curriculum.

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References

- Bandaranayake R. The concept and practicability of a core curriculum in basic medical education. *Med Teach* 2000;22(6):560-563. [http://dx.doi.org/10.1080/01421590050175523]
- Bax ND, Godfrey J. Identifying core skills for the medical curriculum. *Med Educ* 1997;31(5):347-351. [http://dx.doi.org/10.1046/j.1365-2923.1997.00676.x]
- Syme-Grant J, Stewart C, Ker J. How we developed a core curriculum in clinical skills. *Med Teach* 2005;27(2):103-106. [http://dx.doi.org/10.1080/01421590500046403]
- Fishman SM, Young HM, Lucas Arwood E, et al. Core competencies for pain management: Results of an interprofessional consensus summit. *Pain Med* 2013;14(7):971-981. [http://dx.doi.org/10.1111/pme.12107]
- Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet* 2010;376(9756):1923-1958. [http://dx.doi.org/10.1016/S0140-6736(10)61854-5]
- Elkins MR, Moseley AM, Sherrington C, Herbert RD, Maher CG. Growth in the Physiotherapy Evidence Database (PEDro) and use of the PEDro scale. *Br J Sports Med* 2013;47(4):188-189. [http://dx.doi.org/10.1136/bjsports-2012-091804]
- Dawes M, Summerskill W, Glasziou P, et al. Sicily statement on evidence-based practice. *BMC Med Educ* 2005;5(1):1.
- World Health statistics. 2013. http://www.who.int/gho/publications/world_health_statistics/EN_WHS2013_Full.pdf (accessed 16 September 2014).
- The First Line Practitioner Status of Physiotherapists Position Paper 2012. <http://www.physiosa.org.za/?q=node/161> (accessed 20 February 2014).
- Harden RM, Davis MH, Crosby JR. The new Dundee medical curriculum: A whole that is greater than the sum of the parts. *Med Educ* 1997;31(4):264-271. [http://dx.doi.org/10.1111/j.1365-2923.1997.tb02923.x]
- McManus IC, Wakeford RE. A core medical curriculum. *BMJ* 1989;298(6680):1051. [http://dx.doi.org/10.1136/bmj.298.6680.1051]
- Harden RM. AMEE Guide No. 21: Curriculum mapping: a tool for transparent and authentic teaching and learning. *Med Teach* 2001;23(2):123-137.
- Haddad D, Robertson KJ, Cockburn F, Helms P, McIntosh N, Olver RE. What is core? Guidelines for the core curriculum in paediatrics. *Med Educ* 1997;31(5):354-358. [http://dx.doi.org/10.1046/j.1365-2923.1997.00675.x]
- Verma, S, Paterson, M, Medves J. Core competencies for health care professionals: What medicine, nursing, occupational therapy, and physiotherapy share. *Journal of Allied Health* 2006;35(2):109-115.
- Rizk DE, Elzubeir M. Identifying core obstetric and gynecologic skills required of, and used by, graduates of the Faculty of Medicine and Health Sciences, United Arab Emirates University. *Teach Learn Med* 2000;12(2):66-71. [http://dx.doi.org/10.1207/S15328015TLM1202_1]
- Bligh J, Brice J. Further insights into the roles of the medical educator: The importance of scholarly management. *Acad Med* 2009;84(8):1161-1165. [http://dx.doi.org/10.1097/ACM.0b013e3181ace633]
- Broberg C, Aars M, Beckmann K, et al. A conceptual framework for curriculum design in physiotherapy education – an international perspective. *Advances in Physiotherapy* 2003;5(4):161. [http://dx.doi.org/10.1080/14038190310017598]
- O'Keefe M, Jones A. Promoting lay participation in medical school curriculum development: Lay and faculty perceptions. *Med Educ* 2007;41(2):130-137. [http://dx.doi.org/10.1111/j.1365-2929.2006.02666.x]
- Thomas P. Training in the Participan process 2011. <http://www.participan.co.za/business-executive-coaching-training> (accessed 20 February 2014).
- Jones J, Hunter D. Consensus methods for medical and health services research. *BMJ* 1995;311(7001):376-380.
- Snyman MA. Assessment of professional behaviour in occupational therapy education: Investigating assessors' understanding of constructs and expectations of levels of competence. M Phil Health Sciences Education, Stellenbosch University, Stellenbosch, 2012.
- Lloyd-Jones G, Ellershaw J, Wilkinson S, Bligh JG. The use of multidisciplinary consensus groups in the planning phase of an integrated problem-based curriculum. *Med Educ* 1998;32(3):278-282. [http://dx.doi.org/10.1046/j.1365-2923.1998.00221.x]
- Lloyd-Jones G, Fowell S, Bligh JG. The use of the nominal group technique as an evaluative tool in medical undergraduate education. *Med Educ* 1999;33(1):8-13. [http://dx.doi.org/10.1046/j.1365-2923.1999.00288.x]
- World Confederation for Physical Therapy. WCPT guideline for physical therapist professional entry level education 2012. <http://www.wcpt.org/guidelines/entry-level-education> (accessed 20 February 2014).
- World Confederation for Physical Therapy. Policy statement: Evidence based practice 2011. <http://www.wcpt.org/policy/ps-EBP> (accessed 20 February 2014).