Remodelling a PBL curricular component: pathways and results from an experience in faculty development

Iêda Maria Barbosa Aleluia[1], Maria Luisa Carvalho Soliani[1], Sandra Lúcia Brasil Santos[1], Ligia Vilas Boas[1], Rinaldo Antunes Barros[1], Luciana Oliveira Rangel Pinheiro[1]

Corresponding author: Prof Iêda Maria Barbosa Aleluia iedaaleluia@gmail.com
Institution: 1. Escola Bahiana de Medicina e Saúde Pública
Categories: Teachers/Trainers (including Faculty Development), Teaching and Learning, Curriculum Evaluation/Quality Assurance/Accreditation, Clinical Skills

Received: 01/07/2020
Published: 23/10/2020

Abstract

Introduction: We became aware of inconsistencies, within our institution, between the problems used in the Problem Based Learning (PBL) method, the participants’ competencies and the tutors’ approach to the curricular component of basic sciences in the first and second semesters of the medicine course. This led to a need to remodel the component; to clarify the educational objectives; to reduce student workload and to improve links between problems, lectures, practical activities and assessments.

Methodology: We used a problem tree to identify not only the problems but also their causes and consequences, during 06 workshops over a two-year period. This approach involved action-reflection-action, in a collective knowledge construct, with the identification of three levels of problems.

Results and Conclusions: We employed a reflective Community of Practice (CoP) to involve teachers in the whole process, the most innovative part of which was the creation of a blueprint reference to create and evaluate the problems. At the end of the semester, teachers had understood the methodology, solved the problems together and aligned the assessment process.

Keywords: Problem based learning; faculty development; curriculum
Introduction

PBL methodology requires a clear link between a problem's creation (de Lima and Linhares, 2008), the competencies of those involved and the tutors’ approach (Azer et al., 2012). We noticed a lack of consistency between these elements in the curricular component of basic sciences in the first and second semesters of the faculty's medicine course. There was also a degree of dissatisfaction amongst students, due to study overload and it was apparent that little had been done to accommodate PBL methodology. It was therefore necessary to remodel the component, to clarify the educational objectives, to reduce student workload and to improve connections between problems, lectures, practical activities and assessments. The objective of this paper is to report the remodelling of the curricular component, and share reflections on this process and its results.

Methods

We used a problem tree to identify problems (Teixeira, 2010), causes and consequences in 06 workshops over a two-year period, in order to enhance relationships between groups and strengthen bonds. This methodology involved action-reflection-action in a collective knowledge construct (Pio, de Carvalho and Mendes, 2014).

During these meetings the most innovative activity took place in the workshops, and involved the creation of a blueprint reference to create and evaluate future problem cases and to safeguard the quality of the educational material.

We ran workshops on the following themes:

1. Presenting the proposal to remodel the component and the problem tree methodology.
2. Identifying the extent of the problem and learning how to approach difficulties using PBL methods. We also discussed how to prepare a good problem case.
3. Validating and using the blueprint reference in order to evaluate cases.
4. Presenting the new component modeling and the new problem cases created by the faculty group in the first semester and, post-presentation, aligning cases with the blueprint. The rationale was to analyze and validate all cases in order to incorporate subjects into consecutive semesters, creating a progressive learning curve for the acquisition of the necessary skills and competencies.
5. Presenting the results of the previous workshop, with all cases revised and aligned with the blueprint and reflecting on the results achieved during the workshops in four separate spheres: PBL methodology, building cases, relationship between practice tutors and teachers, and process management. In conclusion, the teachers provided feedback on the whole process.
6. Allowing teachers to present the results of the application of new cases throughout the semester and providing a platform for student feedback.

Results and conclusions

After applying the problem tree, and performing a qualitative analysis of the teachers’ comments, we identified three issues:

1. Problem management: the teachers needed to improve their skillset in order to be able to both use the methodology and formulate problems. A reference blueprint was provided to elaborate and evaluate these
problems, and the teachers were able to recognize that a connection was required between problem/objective/methodology and the impact this was having on student life.

2. Methodology: the teachers identified the fact that there were too many objectives within the problems and that there was a lack of clarity for these objectives. They also recognized that the teachers were using PBL methodology incorrectly and that students needed more guidance about references.

3. Students: they recognized that their high school education does not prepare them to exercise the degree of autonomy required to engage with PBL.

The Figure 1 summarizes the problems encountered in each sphere.

**Figure 1: The three issues**

| Problem management | Methodology          | Students                  |
|--------------------|----------------------|---------------------------|
| • Disagreements between practice tutor and teachers | • Cases too complex, with too much | • Difficulty in seeking and expressing knowledge |
| • Overcharge on subjects and lack of time to deepen discussion | • Lack of mastery of the methodology | • Difficulty adapting the method |

We identified the need for the teachers to have a better understanding of PBL methodology. In addition, teachers need to improve their skillset in constructing the cases and to learn to better manage the methods used. Another issue was of disagreement between practice tutors and teachers, with a discrepancy between class activities and teaching strategies. This was complicated by the sheer overload of activities and subjects, which meant that there was often too little time to discuss the cases. The number of objectives was excessive and they were often seen as unclear - a reflection that was highlighted during the workshops.

However, the faculty began to adapt to this new approach. There was improved analysis of the role of the student within the process, and teachers came to envisage how each part of the process empowered the students (Azer et al., 2012). For their part, the students need to develop greater autonomy in respect of their participation in the study, understand their role in the learning process, and free themselves from the shackles of passive learning: traits perhaps developed in high school, which persist.

The teachers subsequently recreated the problems, validating them with the blueprint – a process which can be seen as a measurable success for the curricular component (Wood et al., 2015).

It was clear that by end of the semester teachers had understood the methodology, solved the problem collectively
and aligned the assessment process. The students registered an improvement in their levels of satisfaction with the
method and recognized a reduction in study overload (Carrió, Rodríguez and Baños, 2020).

Take Home Messages

- Faculty development and curricular changes must run concurrently with reflective practice that takes into
  account the role of the teacher, the methodology and required levels of competency.
- A Community of Practice creates this understanding and promotes the development of a new consciousness
  within the faculty group, and it is aligned with other studies (de Carvalho-Filho, Tio and Steinert, 2019;
  Salinitri, Wilhelm and Crabtree, 2015).

Notes On Contributors

Iêda Maria Barbosa Aleluia: works on the Escola Bahiana de Medicina e Saúde Pública in the Medicine course
and at the Faculty Development Program, Brazil. ORCID ID: https://orcid.org/0000-0002-7979-1938

Maria Luisa Carvalho Soliani: works on the Escola Bahiana de Medicina e Saúde Pública, Brazil. ORCID ID:
http://orcid.org/0000-0001-6183-412X

Luciana Oliveira Rangel Pinheiro: works on the Escola Bahiana de Medicina e Saúde Pública in Medicine course,
Brazil. ORCID ID: http://orcid.org/0000-0001-7154-4724

Rinaldo Antunes Barros: works on the Escola Bahiana de Medicina e Saúde Pública, in Medicine course,
Brazil. ORCID ID: http://orcid.org/0000-0002-5959-7417

Lígia Vilas Boas: works on the Escola Bahiana de Medicina e Saúde Pública at the Faculty Development Program,
Brazil. ORCID ID: http://orcid.org/0000-0002-3751-0528

Sandra Lúcia Brasil Santos: works on the Escola Bahiana de Medicina e Saúde Pública in Medicine course and at
the Faculty Development Program, Brazil. ORCID ID: http://orcid.org/0000-0003-4715-2944

Acknowledgements

Figure 1: Source: The Authors.

Bibliography/References

Azer, S. A., Peterson, R., Guerrero, A. P. S. and Edgren, G. (2012) 'Twelve tips for constructing problem-based
learning cases', Medical Teacher; 34: 361–367. https://doi.org/10.3109/0142159X.2011.613500

Carrió, M., Rodríguez, G. and Baños, J-E. (2020) 'Effect of PBL implementation on student and teacher perceptions
of improvement in 21st century skills', BMC Medical Education, preprint. http://doi.org/10.21203/rs.2.24744/v1

de Carvalho-Filho, M. A., Tio, R. A. and Steinert, Y. (2019) 'Twelve tips for implementing a community of
practice for faculty development', Medical Teacher. Feb:17. http://doi.org/10.1080/0142159X.2018.1552782

de Lima, G. Z. and Linhares, R. E. C. (2008) 'Writing good problems', Revista Brasileira de Educação Médica,
32(2): 197-201. https://doi.org/10.1590/s0100-55022008000200007

Pio, P. M., de Carvalho, S. M. G. and Mendes J. E. (2014) 'Práxis e prática educativa em Paulo Freire: reflexões para a formação e a docência', Livro 2: Didática e Prática de Ensino na relação com a Formação de Professores. ed. UECE. Available at: http://www.uece.br/endipe2014/index.php/2015-02-26-14-09-14?limit=5&start=1550 (Accessed: 30 September 2020)

Salintri, F. D., Wilhelm, S. M. and Crabtree, B. L. (2015) 'Facilitating Facilitators: Enhancing PBL through a Structured Facilitator Development Program', Interdisciplinary Journal of Problem-Based Learning, 9(1). http://doi.org/10.7771/1541-5015.1509

Teixeira, C. F. (2010) 'Planejamento em saúde: conceitos, métodos e experiências', Salvador, EDUFBA, p.121.

Wood, S. J., Woywodt, A., Pugh, M., Sampson, I., et al. (2015) 'Twelve tips to revitalize problem-based learning', Medical Teacher, 37: 723–729. http://doi.org/10.3109/0142159X.2014.975192

Appendices

None.

Declarations

The author has declared that there are no conflicts of interest.

This has been published under Creative Commons "CC BY 4.0" (https://creativecommons.org/licenses/by-sa/4.0/)

Ethics Statement

Approved by the dean of our University, Escola Bahiana de Medicina e Saúde Pública, as a program evaluation and part of the institutional program of faculty development, the PROIDD. https://www.bahiana.edu.br/institucional/proidd/

External Funding

This article has not had any External Funding

MedEdPublish: rapid, post-publication, peer-reviewed articles on healthcare professions’ education. For more information please visit www.mededpublish.org or contact mededpublish@dundee.ac.uk.