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LEE SHULMAN: CONTRIBUTIONS TO RESEARCH ON TEACHER TRAINING IN NURSING AND HEALTH

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ABSTRACT

Objective: to reflect on the basic knowledge construct for teaching, the sources of this knowledge and Shulman's Model of Pedagogical Reasoning and Action with a view to investigating teacher training in nursing and health.

Method: this reflection is articulated in three sections: about Lee Shulman; Sources and baseline knowledge for teaching; Pedagogical reasoning and action model.

Result: Lee Shulman is a North American researcher and emeritus professor at Stanford University. In his article entitled Knowledge and teaching: foundations of the new reform, originally published in 1987, he presented three constructs for the understanding and investigation of the teaching practice, which have influenced researchers in different knowledge areas since then, such as biology, mathematics, English, music and social sciences. These constructs are now used and inserted in nursing and health research as well.

Conclusion: the constructs are presented, concluding that their use in research can contribute to the analysis of teacher training and teaching practice.

DESCRIPTORS: Faculty. Teaching. Health human resource training. Nursing. Pedagogical reasoning and action.

LEE SHULMAN: CONTRIBUIÇÕES PARA A INVESTIGAÇÃO DA FORMAÇÃO DOCENTE EM ENFERMAGEM E SAÚDE

RESUMO

Objetivo: refletir sobre os construtos de conhecimento base para o ensino, fontes deste conhecimento e o modelo de ação e raciocínio pedagógico de Shulman com vistas à investigação da formação docente em enfermagem e saúde.

Método: trata-se de reflexão articulada em três seções: Sobre Lee Shulman; Fontes e conhecimento base para o ensino; Modelo de ação e raciocínio pedagógico.

Resultado: Lee Shulman é pesquisador norte-americano, professor emérito da Universidade de Standford, e, no artigo intitulado *Knowledge and teaching: foundations of the new reform*, originalmente publicado em 1987, apresentou três construtos para compreensão e investigação da prática docente, que têm influenciado desde então pesquisadores de diversas áreas do conhecimento, como biologia, matemática, língua inglesa, música e ciências sociais, agora utilizados e inseridos também na investigação em enfermagem e saúde.

Conclusão: apresentaram-se os construtos, concluindo que sua utilização na investigação pode contribuir tanto para a análise da formação quanto da prática docente.

DESCRIPTORES: Docentes. Ensino. Formação profissional em saúde. Enfermagem. Ação e raciocínio pedagógico.

LEE SHULMAN: CONTRIBUCIONES PARA LA INVESTIGACIÓN DE LA FORMACIÓN DOCENTE EN ENFERMERÍA Y SALUD

RESUMEN

Objetivo: reflexionar sobre los constructos de conocimiento básico para la enseñanza, fuentes de este conocimiento y el modelo de acción y raciocinio pedagógico de Shulman con miras a la investigación de la formación docente en enfermería y salud.

Método: se trata de reflexión articulada en tres secciones: Sobre Lee Shulman; Fuentes y conocimiento básico para la enseñanza; Modelo de acción y raciocinio pedagógico.

Resultados: Lee Shulman es un investigador norteamericano, profesor emérito de la Universidad de Standford, y en el artículo titulado Knowledge and teaching: foundations of the new reform, publicado originalmente en 1987, presentó tres constructos para la comprensión e investigación de la práctica docente, que influye desde entonces a investigadores de diversas áreas del conocimiento, como biología, matemáticas, lengua inglesa, música y ciencias sociales, ahora utilizados e insertados también en la investigación en enfermería y salud.

Conclusión: se presentaron los constructos, concluyendo que su utilización en la investigación puede contribuir tanto al análisis de la formación y de la práctica docente.

DESCRIPTORES: Docentes. Enseñanza. Formación profesional en salud. Enfermería. Acción y raciocinio pedagógico.

INTRODUCTION

In contexts of educational change, there seems to be an increasing understanding about the role of teachers in training; and their contribution to the desired success in preparing critical, creative and humanistic graduates,¹ determined by the curricular guidelines, especially in conditions to act competently in the health services. In recent years, we have observed a growing increase in research and reflection on education and teaching in nursing and in other areas of health, in a wide range of aspects. In a literature review,² nurses, followed by physicians, are the professionals who most publish on health teaching.

Almost all studies present a close relation between teacher training and practice. In the scope of the work, we can highlight studies that survey the teaching activities carried out, changes imputed by the educational policies,³ elements that offer satisfaction and dissatisfaction,⁴ work hours, remuneration,⁵ elements related to quality of life and health of teachers,⁶ among others.

In the scope of training, studies are concerned with the characteristics of teachers' knowledge and practices,⁷ papers discussing the practical or theoretical emphasis on training,⁸ the relevance of pedagogical preparation and training,⁹ the initial lack of preparation and the harm pedagogical training has suffered in relation to scientific training in the *stricto sensu* scope,¹⁰ among others.

Among the topics of interest in research on teacher education, direct or indirectly, the pedagogical practice is highlighted. Due to this characteristic, much of the international productions¹¹ are quasi-experimental studies, mixed-method or case studies, which propose or evaluate actions based on theoretical reference frameworks in the area of education.

In Brazil, however, exploratory and descriptive studies still predominate, signaling that, although the interest has been aroused, we still have much to develop in this area of research.

In Brazil, we only have few studies based on Shulman's contribution in the health area. In the area of nursing, we highlight Master's and doctoral studies defended in postgraduate programs at the Federal University of Santa Catarina and also in the areas of dentistry and physical education.

Therefore, the purpose of this text is to reflect on the basic knowledge constructs for teaching, the sources of this knowledge and the Shulman's model of pedagogical reasoning and action of with a view to the investigation of teacher training in nursing and health.

ABOUT LEE SHULMAN

Lee S. Shulman was born and raised in Chicago, the only child of Jewish immigrants. He majored in philosophy and received his Ph.D. in psychology from the University of Chicago. At the Department of Education, he studied with Benjamin Bloome, Joseph Schwab, among other experts in the area of education.

He was particularly influenced by Schwab's work on the structure of the different disciplines, which later reappeared in his work on teacher knowledge. This early introduction of disciplinary knowledge has been a consistent discussion throughout his career. He is best known for his work on basic knowledge for teaching, including the construction of pedagogical knowledge of content, and for his studies of professional education.¹²⁻¹³

His first research work was at the University of Michigan's faculty of education. In collaboration with colleagues at the medical school, he conducted

a study on medical decision making. Two themes of this study continued to resonate throughout Shulman's career: the focus on cognition, professional practice, particularly under conditions of uncertainty, and the specificity of the domain of specialization.¹²

Years later, he started to teach at Stanford University School of Education in the United States, where he is currently emeritus professor at the school of education. In his early years at that institution, he engaged in the conceptual conception of what would become the concept of pedagogical knowledge of content, which launched him to a new stage of research in teaching and teacher training. According to Shulman,¹³ the research dealt in a dichotomous way with the specific knowledge of the subject and the knowledge necessary for teaching practice.

Still in his early years at Stanford University, Shulman developed a longitudinal study on the improvement of knowledge to teach, funded by the Spencer Foundation. Through this case study with secondary education teachers, analyzed the evolution of novice teachers in the discipline they taught during their training and their practice in full-time teaching.

Shulman suspected that, through the process of planning and teaching specific content, teachers could develop more powerful ways of doing it. A crucial aspect of the development of teachers' knowledge was the refinement of how to teach certain subjects, which Shulman saw as a form of knowledge on the full contents. A second type would be pedagogical knowledge, which would go beyond the knowledge of the subject alone, importing the different dimensions of the subject into teaching.¹²⁻¹³

Shulman rested on the work of John Dewey, who in his essay "The Child and the Curriculum" wrote extensively about the difference between logical understanding (the scientist's knowledge) and psychological understanding (the knowledge needed for teachers). At the heart of this construction, there was the notion that the teaching profession has a category of knowledge that distinguishes it from other professions because, to teach, it is not enough to simply know one's discipline well, as knowledge inherent in the act of teaching is also necessary.¹³⁻¹⁴

In addition to scholarly contributions, Lee Shulman has always been closely connected to political and representation movements; he acted as a defender of the teaching profession, of its appreciation and social acknowledgement. He was, for

example, president of the Carnegie Foundation and the American Educational Research Association. He has received several honors and awards in recognition of his work and collaboration for the development of education research, with the Grawemeyer Award in Education, received in 2006.

As the president of the American Educational Research Association, in 1985, he was able to more widely disseminate the pedagogical knowledge of content, making it rapidly popular among teachers and researchers. As a result of his research, in 1987, he published the text *Knowledge and teaching: foundations of the new reform*, presenting to the academic community the constructs that would influence a generation of researchers: basic knowledge sources for teaching, basic knowledge for teaching and pedagogical reasoning and action model.¹⁵ His current area of interest is the relationship between teaching and culture, particularly the Jewish culture.

SOURCES AND BASIC KNOWLEDGE FOR TEACHING

Since the 1980s, Lee Shulman and his associates have developed constructs such as basic knowledge for teaching and the sources of basic knowledge as a way to contribute to the professionalization of teaching and to build support for the educational reform and teacher training policies. His studies¹⁵ were constructed based on some questions: what are the sources of basic knowledge for teaching? In what terms can these sources be conceptualized? What are their implications for educational policies and for the educational reform?

Along this trajectory, four sources of basic knowledge¹⁵ were highlighted (hereinafter referred to as Sources), which underpin the teacher to construct the seven Categories of Basic Knowledge for Teaching¹⁵ (hereinafter referred to as Categories), which are explained more clearly below.

The main reference frameworks for his research were the teachers who participated in his studies.¹⁵ He also sought support in Fenstermacher's analysis of teacher training, quoted by Shulman,¹⁵ who argues that the purpose of this training should be to educate the teacher to reason about what he teaches, something that should be based on the reflection about the practice and on a training with adequately founded ethical, empirical, theoretical and practical premises, with broad support in the professional community of teachers.¹⁵

Table 1 presents the Categories¹⁵ and their descriptions,¹⁶ as well as the respective questions¹⁶ that

can facilitate the recognition of each in the practice of the teacher being observed. These categories¹⁵ constitute a didactic organization of aspects that should constitute the teacher's practice.

Table 1- Categories of basic knowledge for teaching and guiding questions to facilitate the understanding

Category	Description	Question
Content knowledge	Knowledge about the content to be taught, its insertion in a disciplinary field, its theoretical-practical implications and the relation with the other disciplines. It is essential for teaching practice because the teaching process necessarily starts in a circumstance in which the teacher understands what should be learned and how it should be taught. The full mastery of the specific content expands the possibilities of teacher intervention and its shortage restricts the routes to be followed in teaching, making it difficult to understand to what extent the student has learned and which are the most common mistakes.	What is taught?
General pedagogical knowledge	General principles and strategies for class management and organization that go beyond the subject, so that the application of the teaching-learning methods should happen in a fluid and dynamic manner, guided by the learning objectives, aiming to favor the knowledge construction, mitigating students' difficulties, such as the understanding and application of the knowledge to the reality. This demands didactical-pedagogical preparation from the teachers in their continuing and ongoing training.	How is it taught?
Curriculum knowledge	Master of the materials and programs that serve as "tools for the trade" of the teacher, as teaching a subject or content is not a goal in itself, but a vehicle at the service of other ends. Hence, it is essential to get to know the organization and fundamental principles of the course, the insertion of the content and subject in the education, the repercussion and contributions of this discipline to the student and his human and professional development, so as to allow the teacher to develop the subject with consciousness and intentionality.	What phase of the teaching process has been reached?
Knowledge about the students and their characteristics	Knowledge about the students, individual and collectively, in their conceptions, preconceptions, forms of learning and most common mistakes, contextualizing them in their life histories, to welcome the different learning needs. Without this knowledge, the teacher can support his decisions on his view of how it was like when he was a student, or ignore the student's learning process, trends that may entail negative developments, making it difficult to adapt the pedagogical objectives and teaching methods to the students' characteristics.	Who is taught?
Educational context knowledge	Understanding that ranges from the micro-aspect, such as group, class and school functioning, to the macro-aspect, such as school management and funding, to the nature of the communities and cultures. This awareness of the conjuncture marks the operation of teaching, favors greater commitment to the institution, the community and society in general.	What do they believe in and how do they perceive the social, cultural, political and economic knowledge?
Knowledge about the objectives, goals and educational values and their philosophical and historical foundations	Awareness of what objectives, goals and values guide teaching, which have philosophical and historical foundations, being implicit or explicitly manifested in the curriculum and school culture. Also includes the search for knowledge about the culture the student comes from. The teacher should assume a posture of facilitator of the teaching-learning process and center on the development, so that the student constructs his own knowledge, but needs to acknowledge that the student is not a being without background conceptions, but should evolve to reach the scientific knowledge.	From and to where is teaching offered and from where does the other learn?

Pedagogical content knowledge	Specific knowledge of the teacher who, in pedagogical action, integrates subject and didactics to make the content understandable to the student, mobilizing the other basic knowledge categories for teaching synergistically. Therefore, it has a highly relevant role in basic knowledge and refers to a personal construction of the teacher who, by intertwining all of his experiences and combining the knowledge, structures a particular and in-depth conception of the theme with a view to its teaching.	What, how, when, where and why?
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*Source: Adapted from Shulman¹⁵

For Shulman,¹⁵ all Categories are relevant and support the movement expressed in the model of pedagogical reasoning and action (session below). It is nevertheless pertinent to emphasize that its proposal emphasizes the pedagogical content knowledge (PCK), as the category that distinguishes a teacher from a specialist in a particular discipline, as it constitutes the category that consecrates the presence of all others in the teacher's practice and expresses individual ability.

It is emphasized that the PCK is at the intersection between content and pedagogical knowledge, in the teacher's ability to transform his knowledge of the subject in ways that are didactically impacting and yet adaptable to the diversity of the students, in terms of their abilities and baggage.¹⁷

Because it is the union and practical expression of the other categories of knowledge, the PCK is presented, in Shulman's proposal,¹⁵ as the most important category and main focus of investigation on the teacher training and practice guided by this framework.

In studies carried out with professors from technical nursing,¹⁷ nursing and medicine¹⁸ and physiotherapy¹⁶ courses, other categories of basic knowledge have been highlighted. In spite of being categories Shulman did not discuss, they were

recognized and named in studies that used it as a reference framework,¹⁶⁻¹⁸ including the Capacity of a Horizontal Dialog, which implies Shulman's category Knowledge about the Students and their Characteristics, but more specifically expressed in the capacity of a horizontal dialogue, which these authors¹⁶⁻¹⁸ recognized as necessary action for PCK.¹⁶⁻¹⁸

This action¹⁷ is described as relevant to overcome the trend of teaching based on techniques to be followed strictly, aiming to construct actions that facilitate student learning. In the cases of the technical course in nursing¹⁷ and physiotherapy,¹⁶ this finding was corroborated by the students, being recognized as a facilitator of the teaching-learning process, as well as love and respect for the basic professions and for teaching.¹⁸

Beyond the Categories, Shulman¹⁵ presents the Sources that support them. The sources are the paths in teacher training, ranging from academic training in the discipline to teaching, including teaching structures and materials, research on aspects that permeate teaching and learning and their individual and collective actors, to the wisdom imposed by professional practice. The Sources will enable the teacher to construct the Categories in his development. The author also highlights the relevance of each of the four sources described in Table 2.

Table 2 - Sources of pedagogical content knowledge

Sources	Description
Academic education on the subject	It rests on two bases: (a) the bibliography and all accumulated scientific development about the content of the discipline; (b) and the historical and philosophical academic knowledge about the nature of knowledge in the fields of study. Teachers need to understand alternative theories of interpretation and criticism, and how these could relate to aspects of curriculum and teaching. They also need to understand the structures of the subject taught, the principles of conceptual organization and inquiry that help to answer the questions: what are the important ideas and skills in this field of knowledge; how do those who generate knowledge in this area incorporate new ideas and rule out misunderstandings; what is essential and what is peripheral in a discipline; what are the alternative explanations for principles and concepts. This source allows the teacher to develop the ability to convey ideas about how to obtain knowledge in a field and a series of attitudes and values that influence the students' understanding of the content.

<p>Pedagogical structures and materials; Specialized educative structure</p>	<p>The materials and context of the institutionalized educational process, academic bibliography to understand the processes of schooling, teaching and learning. The insertion in the educational context allows the study of diverse materials that will support the teaching practice, such as curriculum, teaching guidelines and textbooks of the area, which are shared among teachers and indicated for reading. Other important opportunities for learning are the moments of dialogue and coexistence among teachers and with the school management, the experience of moments of pedagogical training and participation in forums for discussion on the educational policy, school organization, curriculum, school funding and the structure of the teaching profession. Through this source, the teacher broadens his knowledge of the context, the curriculum, the students and the general pedagogical knowledge, strengthening the pedagogical content knowledge.</p>
<p>Investigation on schooling; social organizations; human learning; teaching and development; and other socio-cultural phenomena that influence the teacher's practice</p>	<p>The search for knowledge in correlated areas, such as education, psychology and psychopedagogy, as well as the teacher's background education, to support the construction of general pedagogical knowledge, knowledge about the students and the curriculum, which support the pedagogical content knowledge. When the teacher starts his teaching career without a pedagogical background, it is common to reproduce models of other teachers' practices, as well as the insecurity about managing the classroom and being able to help the student to learn what the teacher knows and is able to do. This shows the essential importance of the teacher to seek this source of knowledge, as well as the importance of the school to stimulate this process, through moments of pedagogical training, encouragement of experience sharing among teachers, continuous pedagogical monitoring of the teaching staff and particular support to novel teachers.</p>
<p>Wisdom gained through practice</p>	<p>The least coded area, but the maxim that guides competent teachers' practice, being constructed through the deepening of professional practice, imbued with a critical and reflexive spirit to analyze the action itself and the students' answers to the teaching-learning process. It also includes the commitment to the human and professional development process, in which the teacher aims to gain maturity and further awareness of his actions in order to continuously construct and reconstruct his knowledge and actions.</p>

Source: Adapted from Shulman,¹⁵ Miranda¹⁶ and Santos¹⁷

Nevertheless, Shulman highlights the wisdom gained through the teacher's practices, which is constantly supported by the phase-to-phase movement, outlined by the pedagogical reasoning and action model (PRAM), and is a renewable source of baseline knowledge.

PEDAGOGICAL REASONING AND ACTION MODEL

The PRAM is Shulman's third construct,¹⁵ along with the Sources and Categories of basic knowledge. This model represents the teacher's reflexive movement in teaching. It consists of six phases: understanding, transformation (divided in: preparation, representation, selection and adaptation), teaching, evaluation, reflection and new forms of understanding, as can be observed in Figure 1.

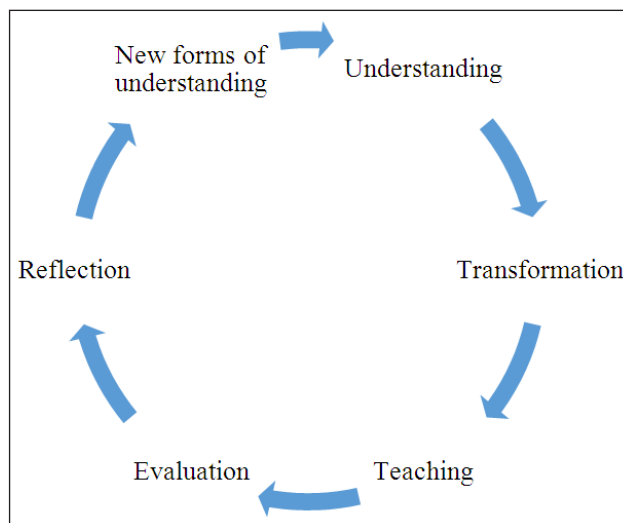


Figure 1 - Phases of the Pedagogical Reasoning and Action Model

In his design of the PRAM, Shulman¹⁵ departed from John Dewey's contribution to the concept of reflection, which is visualized in the model in three moments the teacher goes through in teaching: the background reflection, preparation, would constitute the first two phases (understanding and transformation); the middle phases (teaching and evaluation) would consist of the reflection that occurs during the pedagogical encounter, the act of teaching; the final two (reflection and new ways of understanding) involve the reflection that follows in the moments after the class, or teaching action.

In order to understand the PRAM and its phases in relation to the teaching practice, it is necessary to start from a concrete action. Shulman¹⁵ proposes that we reason about a text and a certain pedagogical intention. The beginning occurs with the understanding phase, which refers to the teacher's action of understanding the material or theme; his movement, ranging from the assimilation of the material itself to its relation within the discipline and the curricular objectives.

In the understanding phase, the teacher translates the content into his / her understanding of the content itself, of the curricular objectives, of the structures of the knowledge production field and of the teacher's relations with the educational / schooling objectives. There is, at this stage, a strong presence of knowledge about the content, the educational context, knowledge of the curriculum, the students and their characteristics.

For example, a teacher, in teaching about any health topic, about signs vital to the deontology, will have to start by unveiling his understanding, even if tacitly and / or unconsciously. He will access different sources, thus triggering different categories of basic knowledge, as he will need to consider not only his knowledge about the subject (wisdom acquired from practice, which supports general pedagogical knowledge and pedagogical content knowledge), but the literature recommended in the teaching plan (academic training in the discipline, which supports the content knowledge), the objective of the discipline described in the course's pedagogical project, in the menu, in the plan (pedagogical structures and materials, which support the knowledge of the curriculum and objectives).

The transformation phase, subdivided into preparation, representation, selection and adaptation, involves reflection on the possibilities of didactic and pedagogical choices made by the teacher, adapted to the characteristics of the class.

Following the previous example, in this phase, the teacher selects the material he will use, considering the importance attributed to the content (involving the general pedagogical knowledge, pedagogical content knowledge and knowledge about the objectives and curriculum), the time of activity and the best didactic strategy (curriculum and pedagogical content knowledge) for the class (knowledge about the students), so that it culminates in the choice to be put into action in the teaching phase.

At this point, the individual mastery over the subject to be taught is transcended. The teacher prepares, represents, selects and adapts the class for the student(s), also considering the same categories of basic knowledge from the previous phase, together with general pedagogical knowledge. It is at this stage that the teacher chooses to suggest the study of a book chapter, the reading of a text or a video, previously provided or in the classroom; chooses a lecture, practice or a technical visit with or without assignment; scoring activities or not in the evaluation. There is a great movement of reflection, as this process will certainly involve learning from background experiences, coming from the wisdom acquired from the teacher's own teaching practice.¹⁹

The teaching phase is the expression of the reflections and choices made in the previous phases and refers to the pedagogical encounter, to the interaction. The evaluation phase is the reflexive movement that the teacher makes to evaluate the reaction and performance of the students facing the didactic and pedagogical choices expressed in the teaching phase, as well as to evaluate, during a session, his own performance, aiming to adapt to the experience.

The reflection phase is the action of the teacher after a session and is related to the critical evaluation of his performance, supported by greater evidence or even by the specialized literature. The phase new forms of understanding represents a sort of end of the cycle, to initiate a new reflexive movement. It concerns the teacher's new understandings on the subject matter, content and curricular objectives, as a result of the reflective accumulation deriving from his background experiences.

It should be highlighted that the teacher does not necessarily develop all phases of the PRAM in his educational practice, or that he develops them in an automated manner, hardly aware of their pedagogical potential in terms of his own teacher training.²⁰

CONCLUSION

The constructs sources, basic knowledge and the phases of the pedagogical reasoning and action model can contribute to the analysis of both the training and the teaching practice in nursing and health, as they permit at the same time the description of what supports these practices and the analysis of what should support them.

They also permit the analysis of what types of knowledge support them and how the teachers mobilize them. The use of this reference framework in an integrated manner or of its isolated constructs alone permits unveiling nuances of teaching in the professions (nursing, medicine, physiotherapy), in the areas (pediatrics, public health) and in educational contexts (public and private schools), not only to investigate our practices, but also to learn from them.

Thus, we consider that the contribution of Lee Shulman to the training and teaching practice in nursing and health is relevant. Its constructs, originating in research developed more than 20 years earlier, directly observing the teacher in his actual practice, can contribute to the construction and development of teachers and, consequently, promote critical teaching and meaningful learning.

We hope that the elements highlighted in the text will permit the diffusion of the reference framework and the promotion of research on the teaching practice, enabling the evaluation and transformation of the teaching practice in health, with a view to promoting the quality of education and vocational training, connected to the needs of the health system and society.

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