Introducing PSTC: Design, Conduct, and Evaluation process of a Pharmaceutical Strategy Training Course

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Abstract

Pharmacy students as future leaders of the pharmaceutical system must acquire different necessary skills through an interdisciplinary approach and pre-exposure to real challenges. To empower pharmacy students, a three-phase short-term elective course has been designed, conducted, and evaluated. The primary objectives of the course were outlined by needs assessment. The course was designed based on Harden's 10-steps course planning. The content of the curriculum and educational strategies were determined through nominal group technique. The Delphi method has been used to decide on the methods of delivering the content in the course. The education process was problem-based and based on active learning. In addition, working in small groups and role-play were also used. Finally, the efficacy of the course was quantitatively and qualitatively evaluated by the Kirkpatrick model and semi-structured interviews. Based on Kirkpatrick's assessment criteria participants' performance was statistically significant ($p \square 0.001$) compared to the control group. The qualitative evaluation also showed results in line with course objectives. Various courses with content similar to some degree to this course are held in different places. However, a small number of reports exist about their design, conduction, and evaluation process. Therefore, we tried to scientifically evaluate our course. Our study suggests that courses with interdisciplinary and leadership approach using active learning methods can be enjoyable for learners, in addition to qualifying participants for various pharmaceutical job opportunities such as non-clinical, academic, and governmental positions, accompanied by improvements in their level of judgment and performance.

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Appendix 1. Questionnaire of the first level of Kirk Patrick (reaction) among participants of the Pharmaceutical Strategy Training Course.

	Question	Excellent	Good	Normal	Weak	Very Weak
First and Second day	How did you evaluate the presentation of the pharmaceutical system?	23.1%	53.8%	23.1%		
	How did you evaluate the presentation of the systems thinking section?	35.5	46.2%	7.7%	7.7%	
	How did you evaluate the exercises in systems thinking?	30.8%	46.2%	23.1%		
	How effective was the presentation of the pharmaceutical system in creat-ing a comprehensive view of the pharmaceutical system for you?	38.5%	23.1	15.4%	23.1%	
	To what extend the content of sys-tems thinking was new to you?	23.1%	46.2%	15.4%	15.4%	
	To what extend the content of the drug system was new to you?	38.5%	46.2%	15.4%		
	What was your overall assessment from the first and second day of the course?	23.1%	53.8%	23.1%		
Third day	How did you assess the topic of drug challenges?	9.1	36.4	27.3	27.3	
	How did you evaluate the presentation of the decentralization section?		45.5	27.3	18.2	9.1
	How did you evaluate the presentation of the decision topic?		9.1	36.4	27.3	27.3
	What was your overall assessment from the third day of the course?	9.1	45.5	36.4	9.1	
Fourth day	How did you evaluate the quality of the strategic thinking workshop?		37.5	50	12.5	
	What was your overall assessment from the fourth day of the course?		50	25	25	
	What was your overall assessment of the entire course so far?		25	50	25	
	Now that we are at the end of the course, how much do you think the skills and learning of the course are effective in increasing your analyti-cal power?	12.5	37.5	50		
Fifth day	How do you evaluate the title of the final exer-cise of the course and the choice of trends?		37.5	50	12.5	
	How much did the content of systems thinking play a role in your presen-tation?	12.5	75			12.5
	How much did strategic planning content play a role in your presen-tation?	50	25	25		
	In general, how do you rate the course?		37.5	50	12.5	

Appendix 2. Questionare of the second level of Kirk Patrick (learning) among participants of the Pharmaceutical Strategy Training Course and control group.

Evaluation questions	Participant group	Control group
	Percentage of response to the right option	Percentage of response to the right option
Which of the following options is not a public policy in the field of medicine?	42.1%	21%
In the reference-based pricing method, which of the following countries is considered as a reference?	57.9%	0%
Which of the following is not a duty of the Food and Drug Admin-istration?	84.2%	42%
Which of the following international organizations offers consult-ing solutions in the field of medicine and health?	89.5%	68%
Which of the following systems is more efficient in terms of health justice?	68.4%	36.8%
Which option refers to the goals of health systems?	57.9%	36.8%
What is the primary orientation of the World Health Organiza-tion?	63.2%	42%
Regarding the systems approach, which option is correct?	63.2%	42%
According to the systemic approach, the symptoms of a problem and its causes are mainly in terms of time ..... and spatially	36.8%	15.8%
Choose the appropriate statement associated with the "mission".	89.5%	52.6%
What is the name of the way to reach the final goal?	84.2%	52.6%
What is the first use of a swot chart?	78.9%	26.3%
Which model expresses multidimensional decision making?	84.2%	

Appendix 3. Questions of semi-structor interviews with participants of the Pharmaceutical Strategy Training Course.

Level	Check List	Explanation
Ice-breaking	Introducing themselves and their group	Which organization did your group play?
	Recalling the course	Do we need to review educational titles for once?
Reaction	General feeling	How was the experience? How is it recorded in your mind?
	Welcome	If the course continues at a new level, will you partici-pate? Why?
Education & instructors presentation	Educational content	What was your opinion about the content of the course?
	Instructors presentation	What was your opinion about the presentation of the instructors?
	Level of training	How was the training in the course?(General and basic (less than we thought) / practical and concise (enough) / more than we need)
	Educational content related to the field of study	Was there a part you felt you were not interested in the material? Or would you like to know more and be told in more detail?
	Educational reforms	If a similar period were to take place, what reforms would you consider for it?
	Appropriate audience	If you want to recommend the course to someone, what field and semester do you prefer? Who benefits the most?
	Creativity and innovation	How did you assess the level of creativity and innova-tion of the course?
Impact	Teamwork	How was teamwork in your group? Was there a part you did not like? Or did you feel that your work was going better through a working group?
	Final project	How did you do the final reports/assignments? What did you learn from it?
	Motivation or confidence for interdisciplinary activity	How has your motivation or self-confidence for interdis-ciplinary activity changed based on what you learned?
	Usability	Where do you think next course training can be helpful for you?
	Influence	What effect did it have on you? Example: News of a comprehensive document of health services in pharma-cies: What is your opinion? What would be your reac-tion if you were before taking the course?
	Challenge identification	What is the first challenge that comes to your mind in the health system?
	The motivation of student activity	During your student days, what problems do you pre-pare yourself to solve?

Appendix 4. Questions of semi-structor interviews with instructors of the Pharmaceutical Strategy Training Course.

Level	Check List	Explanation
Ice-breaking	Recalling the course	Have you read the course summary file? Do we need to review educational titles for you?
Education & instructors presentation	Learning prerequisite	Did students need to read the topics before attending your workshop?
	Student participation in discussions	How did you evaluate the students' participation in the taught topic?
	Appropriate audience	Who is the audience of this course? (Field/level of edu-cation)
	Efficiency / effectiveness	How did you evaluate the final project of the partici-pants? What assign-ments/projects can be considered to evaluate participants?
	Suggested content	What other topics can be covered? What contents were needed to include?
Administrative feedback	Teamwork	Were you satisfied with the grouping of students? What feedback did you receive from the task group that the students performed?
	Usability	What activities do the participants of this training get the opportunity to participate?
	Creativity and innovation	How was this course new to you? How did you evaluate the creativity and innovation in developing the project?
	Continue	What are your suggestions for holding similar courses or the next level of this training course?

Appendix 5. Likert-scale questionnaire form of the final project of the Pharmaceutical Strategy Training Course.

Referee Name: .... Provider Organization:..................................... .

Category	Sub Category	Very Weak	Weak	Medium	Good	Very Good
Performance	The power of effective expression and transmis-sion of con-cepts					
	Using new methods in presentation					
	Observe the schedule					
	Identified topics and categorized content					
Reasoning	Description of the current situation					
	Use reliable sources in reasoning and planning					
	A logical and convincing course					
	Ranking and prioritizing strategies					
	Rational prediction of the impact of trends on organizations					
	The proportion of actions and strategies to the position and facilities of the organization					
Technique	Existence of strategic planning topics in presen-tation (general goals, mission, values, plans and actions)					
	Quality of review and explanation of topics					
	Proper use of strategic planning techniques (rankings, tables, etc.)					
	Drawing accurate and comprehensive causality diagrams for the final strategy					
	Correct and comprehensive SWOT review					
	Selecting appropriate methods in identifying actions and deci-sions (brainstorming, elites, etc.)					
Comprehensive-ness and obstruction	Comprehensive and adequate review of organi-zations in-volved in the health and pharmaceuti-cal system					
	Investigate the impact of the final action se-lected and design appropriate support measures					
	Investigate the cross-cutting effect of trends and consider them in program design					
	Investigate the cross-cutting effect of trends and consider them in program design					