



Creative learning using crossword puzzle as learning tool for undergraduates in obstetrics and gynecology

Uma Gupta¹, Narendra Kumar Gupta², Parul Sinha¹, Sweta Gupta³, Farzana Mahdi⁴

ABSTRACT

Purpose of study: Interactive and creative learning makes medical education interesting. Medical students are introduced to many concepts in a short time. The aim of the study was to see the practicality of using crossword puzzle as an interactive and creative learning tool for undergraduates. To determine the usefulness of crossword puzzle as an effective way to reinforce essential concepts and vocabulary. **Methodology:** Crosswords were formulated and content validity ensured, by linking the clues and answers to specific learning objectives. Words pertinent to the topic were included. Approved abbreviations used. The clues were clear and concise. They were completed by the students in collaborative groups of 3-4 with a reward for the first group who successfully complete the puzzle. 15 min was allotted for 25-30 clues of the puzzle. Student perceptions (117) toward crosswords for their learning were done with a survey using 12 questions on a 5-point Likert's scale and informal feedback from faculty. **Results:** Two groups (4 each) completed correctly in 12 min. Most students 93.7% (98 of 117) indicated that crosswords were useful and contributed to their learning. Feedback on Likert's scale revealed that: Identifying key concepts and vocabulary (Q1-50% strongly agree [SA], 33 A), as a useful learning tool (Q2-47% SA and 38% A); as a collaborative and competitive aspect (Q3-45% SA, 32% A and 5% SA). Crossword puzzle was easy (7% SA and 13% A). Written and informal comments indicated student enthusiasm for and a desire to participate in more of these exercises. Informal feedback was from faculty revealed that it was time-consuming though useful. **Conclusions:** Reasonably good response was obtained from undergraduates (8th and 9th semester) students to crossword puzzle technique as edutainment. Development of judicious complex puzzles of different variety is suggested.

KEY WORDS: Collaborative learning, crossword puzzle, interactive learning

¹Department of Obstetrics and Gynecology, Era's Lucknow Medical College, Lucknow, India, ²Department of Medical Education, Era's Lucknow Medical College, Lucknow, India, ³Department of Biomedical Engineering, (camp in India), Working at Saint Mary's Regional Medical Center, Reno, US, ⁴Department of Biochemistry, Director Academics, Era's Lucknow Medical College, Lucknow, India

Address for correspondence: Uma Gupta, Department of Obstetrics and Gynecology, Era's Lucknow Medical College, Lucknow, India. E-mail:umankgupta@gmail.com

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INTRODUCTION

In this fast-paced era of technology and advancement, it is imperative to make significant strides in medical education in order to fulfill the challenging medical needs of our growing population. Medical students are exposed to a very vast curriculum wherein they have to study numerous concepts in a short time frame. This forces most students to cram the study material without understanding the basic concepts required to understand the human body, and diagnose and treat diseases. Medical education system has to improve by incorporating innovative methods for communicating concepts and ideas to students [1]. Interactive learning methods are becoming extremely popular and are showing fruitful results in today's world of medical education.

The educational experience becomes more fruitful by using active strategies which alleviates boredom and breaks the monotony. Active strategies such as quiz, debates, role-play, and puzzle-solving have made learning enjoyable [2,3].

The aim of the study was to see the practicality of using crossword puzzle as an interactive and creative learning tool for undergraduates. To determine the usefulness of crossword puzzle as an effective way to reinforce essential concepts and vocabulary.

METHODOLOGY

Observational study was performed on a judge mental sample. Permission was obtained to conduct crossword puzzles.

Crossword was made using a space of 25 across and 25 spaces down to create the puzzle. Within the framework 20-25 words and clues were developed and used. Multiple drafts are prepared as our ideas grew and developed. Once the final draft was completed it was distributed to the faculty, the content specialist to validate the content and format. After the size was found to be adequate and content found suitable and reflective of the course that the puzzle could be used as a tool, piloting was done on peers. Next the puzzle was presented to the 8th and 9th semester students. The clues ranged from easy to difficult. Simple rote learning and recall were considered and understanding, applications of knowledge and problem-solving were considered difficult and relevant for the goals of the course. No misleading clues were used (Annexure-1 Crossword puzzle). There were 25-30 clues to be solved in 15 min.

The activity was performed after the topics were taught in class or demonstrations. The time was at the end of a theory class of the whole batch. Students were in a group of 3-4 students to complete the exercise in a cooperative and collaborative manner. The group that completed within time was rewarded. Three such crossword puzzles were conducted on must know areas in obstetrics and gynecology namely normal labor, family planning, and pelvis and fetal skull. After they had finished they were asked to make a peer assessment in random groups followed by discussion. Discussion was broadly aimed at clarification of doubts and specific suggestions.

Evaluation

Data were collected from 3 different classes of students of 8th and 9th semester through questionnaire surveys that included questions dealing with crossword puzzles. They were asked to respond a 5-point Likert scale. The 12 questions surveys were prepared based on the overall educational objective of assessing the usefulness of this interactive learning intervention. The questions were developed to assess 5 broad areas of students' perceptions of crosswords for usefulness in identifying key concepts and vocabulary, usefulness in learning, collaborative aspects, and satisfaction. The content validity was ensured by asking an expert to evaluate the relevance of the items and the questionnaire was pretested on a group of medical students who had completed these courses. Informal student comments were also noted. Informal peer evaluations were recorded.

Statistical Tests

The Likert scale data were analyzed for individual questions by descriptive statistics.

RESULTS

Two groups (4 each) completed correctly in 12 min. Most students 93.7% (98 of 117) indicated that crosswords were useful and contributed to their learning. Feedback on Likert's scale revealed that: Identifying key concepts and vocabulary (Q1-50% strongly agree [SA], 33 A), as a useful learning tool (Q2-47% SA and 38% A); as a collaborative and competitive aspects (Q3-45% SA, 32% A, and 5% strongly disagree).

Crossword puzzle was easy (7% SA and 13% A) [Figures 1 and 2]. Written and informal comments indicated student enthusiasm for and a desire to participate in more of these exercises. Informal feedback was from faculty revealed that it was time-consuming though useful.

Written and informal comments indicated student enthusiasm and a desire to participate in more of these kinds of learning exercises. Approximately 7% of students considered this exercise a time waster. Some of the students, after having heard about this tool from their peers and colleagues, enquire of its time. Peer evaluations have also favorably evaluated this exercise.

Feasibility of Crosswords as Tool

The time required to plan a content-valid crossword at a moderate level of difficulty was around 5-6 h. It took about 20-30 min to hand out the exercise, allowing students time to complete it and discussing the answers.

DISCUSSION

The feasibility of a large group and in community setting needs further evaluation. A similar simple crossword puzzle was used by Habibian *et al.* [4] in assessing dental students regarding their knowledge of orthodontics. Speers [5] used crossword puzzles in teaching strategy for critical care nursing. Even more complex designs were used by Ber [6] the comprehensive integrative puzzle described by him has a complex design with

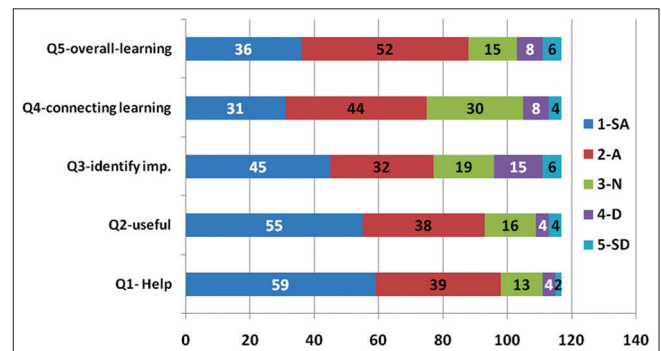


Figure 1: Feedback from students on Likert's scale - 1-5 n = 117

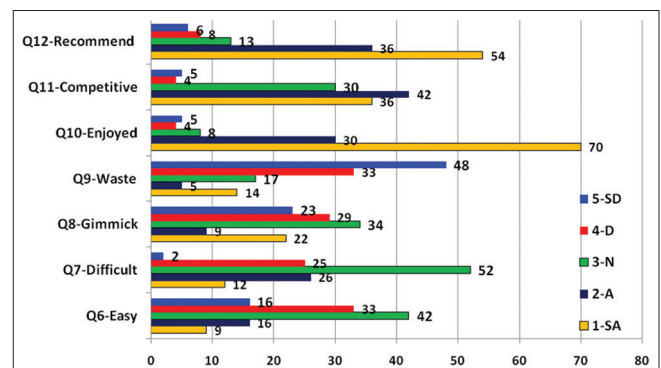


Figure 2: Feedback from students on Likert's scale - 1-5 n = 117

columns containing the clinical vignettes and the rows have the diagnoses. However, despite the complexity, it is found that the approach is highly accepted by both teacher and students. Manzar and Al-Khusaiby [7] demonstrated the successful use of crossword puzzle in a small group teaching.

Set up; they utilized the discussion on a common neonatal problem covering the different aspects of the neonatal jaundice including etiology, differential diagnosis, laboratory investigation, management approach, and complications.

Our observations provides insight into [1] the utility of crossword puzzles in undergraduate medical education to reinforce learning and vocabulary in an interactive environment, [2] the response of students and other facilitators to the inclusion of crosswords, and [3] its feasibility in a large class setting.

Educators are faced with the challenge to provide education, which stimulates and encourages adult learners. Educational games have been implemented with success. The value of crossword puzzle is that the learner is stimulated to recollect the previous contents learned and has fun solving the crossword puzzle.

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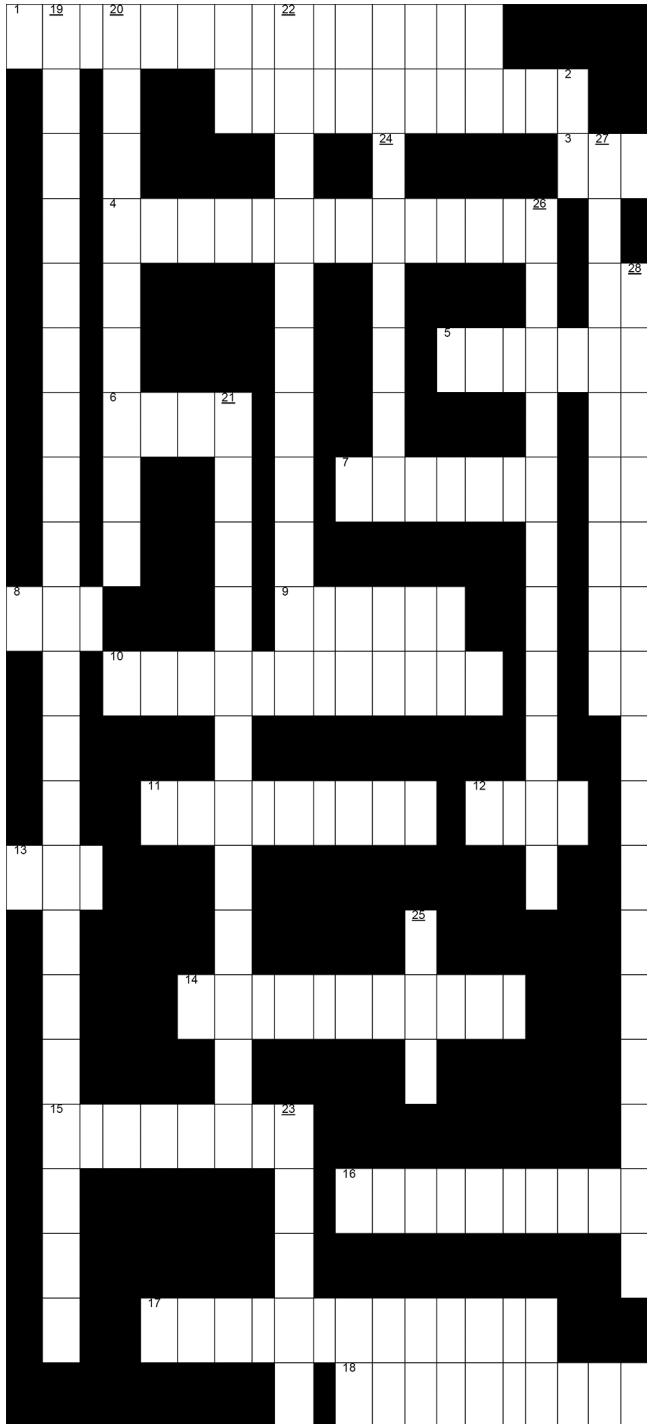
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Annexure I (Crossword puzzle)

Department of Obstetrics and Gynecology, ELMCH, Lucknow

In Collaboration with the department of medical education.
PUZZLE: Family Planning



Horizontal:

1. Absolute contraindication of hormonal contraception (15).
2. Method of emergency contraception. (Reverse spelling) (12)
3. Within ----- days of menstruation IUCD should be placed. (3)
4. Merina is a ----- hormone containing device.(14)
5. Metal wind with spermicidal property on intrauterine device. (6)
6. Mechanical devices placed in the uterine cavity are called as-----.[short form](4).
7. COC of government supply available free of cost.(5)
8. Only progesterone used for contraception orally.(short form) [3].
9. Barrier device used by male for temporary contraception. (6)
10. Intrauterine system releasing 65 u gm of progesterone every day .(12)
11. Permanent method of male sterilization.(9)
12. Injectable progesterone used contraception for 3 monthly uses. [short form] (4).
13. Lactation as a method of contraception (Short form) [3].
14. Non-hormonal contraception (11)
15. Permanent method of female sterilization.[one box will have 2 alphabet)(9)
16. COCs, which have three types of pills used in cycle(9)
17. Intrauterine device insertion immediately after delivery is called as----- insertion.(13)
18. Anti-tubercular drug reduces efficacy of COCs.(10)

Vertical:

19. Temporary contraception by hormones is called as----- --(21).
20. Estrogen helps in contraception by inhibiting ----- (9)
21. Which newer progesterone is advised during lactational period as oral hormonal contraception.(11)
22. ----- pills which have same strength of drugs in all the days.(10)
23. COCs used in Emergency contraception in different doses as per estrogen contents in them is called ----- regimen. (5)
24. LNG-IUS is in a device called -----.(6)
25. Combination of hormones in pills [short form](3)
26. Endoscopy widely used for permanent sterilization.(11).
27. ----- contraception is a way to prevent pregnancy within 72 hours of unprotected coitus (9).
28. Natural method of temporary contraception. (2 words) [6+10]