

Emergency medicine residents' acquisition of knowledge of Point of Care Ultrasound and satisfaction with Flipped Classroom andragogy



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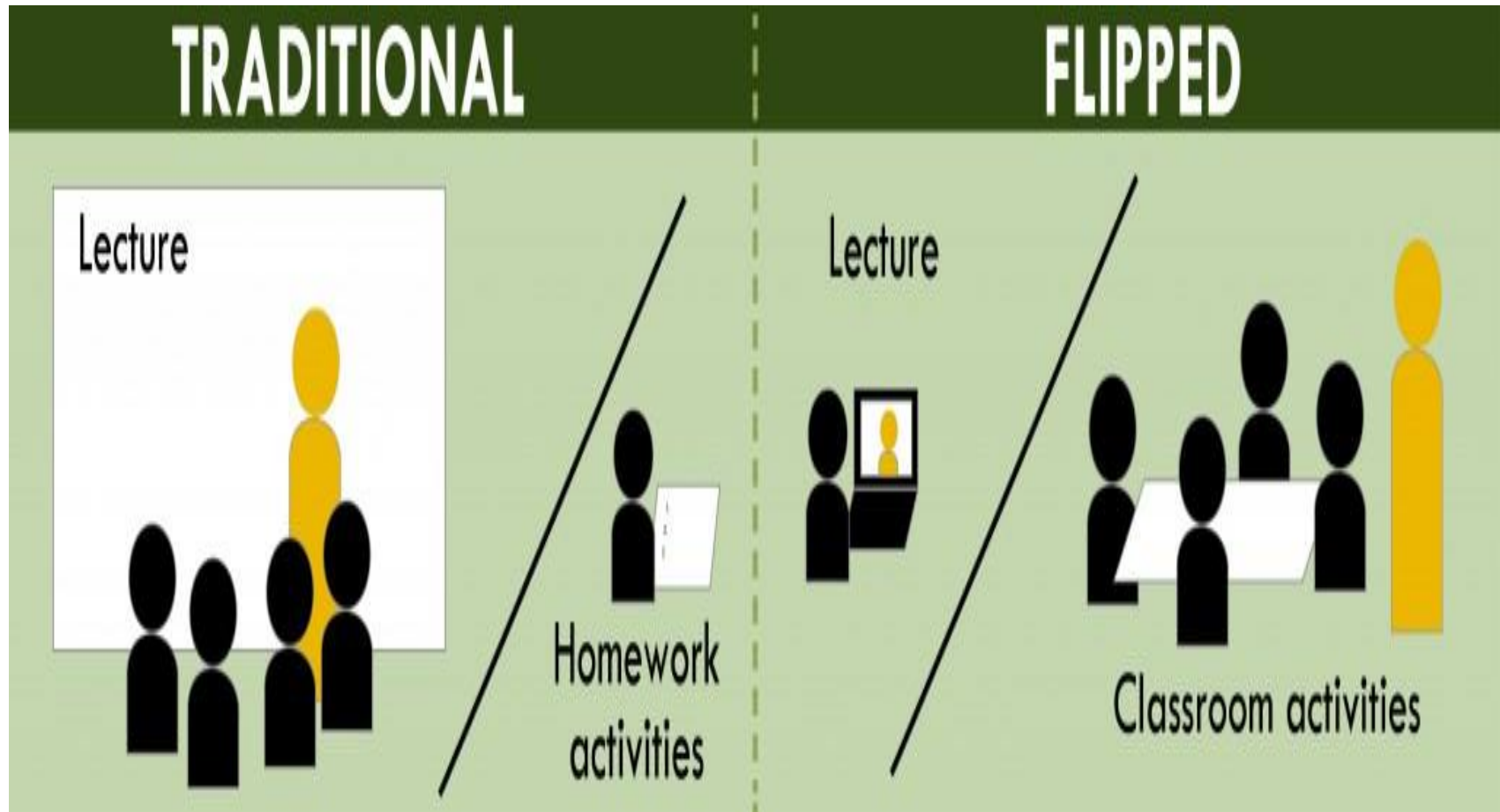
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Flipped classroom :

is an instructional strategy and a type of blended learning that reverses the traditional learning environment by delivering instructional content, often online, outside of the **classroom**. It moves activities, including those that may have traditionally been considered homework, into the **classroom**



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Background:

Flipped classroom (*FC*)


point of care ultrasound (POCUS) teaching

We **aim** to evaluate the acquisition of knowledge of POCUS and residents' satisfaction with *FC* approach




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Methods:

- A prospective mixed methods crossover study
 - 29 residents were subjected to *both F2F* and *FC* teaching of POCUS over a period of 3 months
 - MCQ test conducted before, immediately after and 2 months after each educational intervention.
 - The resident's satisfaction was assessed through a semi structured interview
- 

Results:

- Total participant in the study 29 ED Residents
 - 7 residents PGY-1
 - 8 residents PGY-2
 - 6 residents PGY-3
 - 8 residents PGY-4
 - The baseline mean score was 15.82 using MCQs test mean score
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Results: Table 1 comparison of the MCQ test scores

| Serial no | Variable | Mean score difference | 95% Confidence Interval | P value |
|-----------|--|-----------------------|-------------------------|---------|
| 1 | <i>Comparing PostF2F V PreF2F</i> | 2.72 | 2.14 to 3.29 | 0.001 |
| 2 | <i>Comparing PostFC V PreFC</i> | 3.93 | 3.29 to 4.56 | 0.001 |
| 3 | <i>Comparing PostF2F2months V PreF2F</i> | 1.72 | 1.16 to 2.29 | 0.001 |
| 4 | <i>Comparing PostFC2months V PreFC</i> | 4.48 | 3.77 to 5.19 | 0.001 |
| 5 | <i>Comparing PostFC2months VPostF2F2months V</i> | 2.75 | 1.87 to 3.64 | 0.001 |

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Results: Table 2 Residents comments after the educational interventions

| Comments | Face to Face Teaching (F2F) | Flipped classroom(FC) |
|----------|-------------------------------|--------------------------------------|
| 1 | Interesting in the beginning | Very stimulating |
| 2 | Became boring halfway through | Engaging through out |
| 3 | Too much information | Was able to ask lot of questions |
| 4 | Felt sleepy | Remain awake throughout |
| 5 | Less retention | Retained most of the information |
| 6 | Would prefer shorter lecture | Would prefer all teaching through FC |

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Conclusion.

FC & F2F resulted in significant and sustained retention of POCUS knowledge.

FC teaching even better retention of POCUS knowledge

Preference for the FC approach



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1. The European Emergency Medicine Congress (EUSEM) conference, Scotland September 2018
2. Journal of point of care ultrasound(POCUS Journal) August 2018

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Articles in this issue

Research: Emergency medicine residents' acquisition of point-of-care ultrasound knowledge and their satisfaction with the flipped classroom andragogy

Research: Emergency medicine residents' acquisition of point-of-care ultrasound knowledge and their satisfaction with the flipped classroom andragogy

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Abstract

Background: One of the traditional approaches for knowledge transfer in medical education is through face-to-face (F2F) teaching. We aimed to evaluate the acquisition of knowledge about point-of-care ultrasound (POCUS) and learner's satisfaction with the flipped classroom (FC) teaching approach. **Methods:** This was a prospective, mixed-method, crossover study and included 29 emergency medicine (EM) residents in current training program. Over a period of three months, each resident was exposed to F2F and FC teaching models in a crossover manner. There was a multiple-choice questions (MCQ) test before and after each educational intervention (F2F & FC). Two months after each educational intervention a final MCQ test was administered to assess the retention of knowledge between the two approaches. After each educational approach feedback was sought from a selected group of residents concerning the acceptability of the two educational approaches through a semi structured interview. **Results:** A total of 29 EM residents participated in this study. The numbers of residents by year of post-graduation training were seven (24.14%) PGY-1, eight (27.59%) PGY-2, six (20.69%) PGY-3, and eight (27.59%) PGY-4. The baseline mean score was 15.82 using MCQs test mean scores. For the face-to-face teaching model the difference between pre and post-intervention scores was 2.7 (95% CI 2.1 to 3.3, $p=0.001$); whereas, for the flipped classroom teaching model, the difference was 3.93 (95% CI 3.2 to 4.5, $p=0.001$). At two months post-intervention, for face-to-face teaching model, the MCQ assessment showed an increase of 1.7 (95% CI 1.1 to 2.2, $p=0.001$) mean scores when compared to the pre-intervention mean scores; whereas, for the flipped classroom model this difference was significantly higher, recorded as 4.48 (95% CI 3.7 to 5.1, $p=0.001$). Finally, the difference between mean scores for F2F and FC teaching





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Thank You