The Effect of Active Learning with Block and Problem Based Learning on Motivation, and Academic Performance of Dental Students - A Prospective Study

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ABSTRACT

Introduction: Active learning stimulates higher-order thinking, problem-solving, and critical analysis while providing feedback to both student and instructor.

Objective: The declining quality of higher education has prompted the need to transform traditional curricula to better prepare students for success using active learning, which actively stimulates higher-order thinking, problem-solving, critical analysis, the psychomotor and affective domains. The present study examined the impact of active learning with block and problem based learning (PBL) on motivation and academic performance in dental students.

Methods: The study group involved 59 male dental students (First year = 20, second-year = 20, third-year = 19) aged between 18 to 21 years old. The learning motivational scale, learning skills, and performance were assessed in all students. Block examinations and a feedback six-point scale rating assessment evaluation form containing 27 closed-ended were used. The 95% confidence intervals were constructed to test the significance.

Results: The second-year students scored better marks and grade point averages than the 1st- and 3rd-year students. The motivational factors of 3rd-year students were less than the second year. The 1st-year students came from traditional teaching backgrounds and were lacking in their motivational and overall scores. The assessment in PBL scores was significant between 1st and 3rd-year students ($p < 0.05$).

Conclusion: Active learning with block and PBL strategies enhance the motivation and academic performance of dental students.

Key Words: Active learning, Problem based learning, Academic performance, Motivation, Dental

INTRODUCTION

Active learning is the process by which a student independently, or collaboratively with peers, identifies learning objectives, seeks necessary information to meet the objectives, and contributes to the learning of a group with information prepared and discussed by the student.¹⁻³ It stimulates higher-order thinking, problem-solving, and critical analysis while providing feedback to both student and instructor.^{2,5} In contrast, traditional teaching involves only passive learning and memorization without much active learning.^{4,5} Furthermore, passive learning in hour-long lectures often limits the potential of students and can deprive them of rich educational experiences.² Students can read and learn information on their own, but they need instructors and mentors to stimulate and

challenge their thinking, guide them in solving problems, and encourage their learning and application of the material.^{2,4} Active learning depends on several factors, but a crucial step is the engagement of the learner. Teaching is as much about setting the context or climate for learning as it is about imparting knowledge or sharing expertise.^{6,7} The educational environment impacts students' learning experiences and outcomes.^{7,8} Educational environment influences how, why, and what students learn.⁸ The importance of resource and time management and effort regulation over the use of learning strategies in the explanation of academic performance reported by previous studies.^{9,10,11} Active learning encourages students' participation and strengthens motivation, thereby enhance student performance.¹² A recent study suggests that

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motivation may be enhanced by measures such as problem-based learning (PBL), small-group work, and early contact with patients.^{13,14} PBL is a subset of activity based learning which involves the educational objectives of cognitive, psychomotor and affective domains.^{15,16} Students in PBL are often having a good judge towards their knowledge and skills. Students themselves must seek the answers to their learning needs from each other and/or independent research. In various studies, self-regulated learners monitoring their progress towards self-set goals can imitate on the effectiveness of their learning approaches, tend to view the learning task as interesting and worthwhile, and have high levels of self-efficacy, and engagement in learning behaviours was seen among these students.¹⁷ The student performance showed conflicting results in associations of motivational beliefs, learning, and resource management with dental students.¹⁸

Given the explosion of dental information and new technology as well as the rapidly changing demands of the future dental practice, a new model and strategy of learning were developed that would better prepare dental students for professional practice. The present study was conducted to evaluate the impact of active learning on dental students' motivation and academic performance after using block and problem-based learning strategies. The hypothetical assumption was that the innovative active learning activity used in the student-centred dental students' learning would have a higher impact on their significant improvement in motivation and engagement, satisfaction, and knowledge of students.

MATERIALS AND METHODS

Study participants

Outcome-based active learning was assessed using feedback on a pre-tested active learning evaluation sheet by 1st- (n=20), 2nd- (n=20), and 3rd-year students (n=19). Participants were male dental students aged between 18 to 21 years old who had completed the examination in a block using the active learning method of teaching, which includes PBL and objective-based interactive teaching. Ethical clearance was taken from the institution before the start of the study (Institution ethical clearance number 39-11007-0007).

Active Learning at Taif University, Faculty of Dentistry

Active learning through the PBL format used. Throughout the semester, participants were closely monitored for their ability to balance the course workload using the PBL format. The student presentations and discussion were replaced with active learning exercises based on group discussions, which best applied the concepts learned in the course.

Data Collection and Instrument:

The study was conducted for 3 months from August 2, 2019, to November 5, 2019. The evaluation data were collected in a pre-tested six-scale evaluation form assessing each objective structured block, and analysis was performed with data obtained from the responses of Strongly Agree, Agree, True Sometimes, Disagree, and Strongly Disagree (Table 1).

Statistical analysis

95% confidence intervals were constructed to test the significance. The difference in proportion was tested using the Chi-Square test and Kruskal-Wallis H followed by Man-Whitney U test. The mean difference was tested using analysis of variance (ANOVA). All tests were two-sided and the significance level was set at $p < 0.05$.

RESULTS

The dental students' performance scores in the block examination, PBL marks, and grade point averages (GPA) are shown in Table 2. Mean marks score in block exam and PBL was high for 2nd and 3rd-year students compared to 1st year and the difference was statistically significant ($p < 0.05$).

Participants' concepts and teaching staff members in concern block as explained in Table 3. First and second-year students agreed that the Block concepts were clear to them. First-year students agreed that the staff members were committed and available for student guidance during office hours. Third-year students did not agree with staff commitment towards active teaching of students.

Students' responses toward active learning resources and acquired knowledge, study workload, assessment skills are explained in Table 4. Third-year students agreed to better availability of active learning resources in the concerned Block. Second and Third-year students agreed that active learning process helped them to acquire better knowledge and skills with proper distribution of workload.

Students' responses towards quality standards of active learning in the concerned block are explained in Table 5. First and second-year students agreed that Block active learning has good quality standard.

Students' responses towards problem-based learning in the small group integrated teaching of the concerned block is explained in Table 6. The result showed 3rd-year students presented with better overall rating compared to first and second year.

DISCUSSION

Ongoing concerns about the declining quality of higher edu-

cation have prompted numerous calls for reform, drawing attention to the need to transform traditional curricula to better prepare students for success.² All have been challenged to better prepare their students to meet the evolving health care needs of society.^{6,7} In the present study block-based, student-centred active learning with PBL was used to assess the students' motivation and academic performance. The active learning methodology was first introduced to the students 3 years ago as the 3rd-year students entered this faculty, and due to this first exposure and the newly recruited staff untrained in such active learning methods, the motivational factors of the 3rd-year students were below those expected as compared with the 2nd-year and the new 1st-year students, and the reasons for this may be multifactorial.^{8,9} Second-year students who had been exposed for 2 years have better scores and strong understanding responses as they were prepared during this stage in every way including updated quality of the blocks, improved teaching experience, and improvement in active learning process and principle. First-year students who had just entered the new active learning principle and process were lacking in their motivational and overall scores since they had come from a traditional teaching background. For 3rd-year students, there were significant results in the feedback assessment, but conflicting scores were seen, which was also significant. In beliefs and learning strategies, despite a positive indirect relationship, the results suggest that use of learning strategies may lead to academic success, but only if combined with good resource management and participation.^{19,20} Our findings suggest that the effect of effort and time management on performance was mediated by active participation. Resource management stimulates motivation in the student to participate in a variety of learning activities, which influences the student's grades in line with the results of earlier studies among students.^{21,22} In the present study, the 1st-year students' responses were poor compared with those of the 2nd- and 3rd-year students. However, 2nd-year students responded well and significantly, and, surprisingly, 3rd-year students had a contradictory response, which may be explained by it being the first introduction to both students and teachers of the block in every stage they entered (Tables 5 and 6). In the present study, self-regulated learners monitored their progress towards self-set goals and were able to reflect on the effectiveness of their learning approaches. This finding is supported by motivational and behavioural factors in the active learning process.²³ In the present study, the motivational beliefs of students in value and self-efficacy, learning strategies in deep learning and resource management, participation in lecture, skills training, and completion of assignments and performance were outstanding.

The present study result showed practical learning in PBL stimulated students to participate in learning activities and motivation. Although it might make participation mandatory,

it is better to aim to stimulate participation by enhancing students' value beliefs and motivation. The responses to problem-based learning (PBL) were remarkable and encouraging with a significant agreeable response ($p < 0.05$). This study suggests that participation mediates the relationships among motivation, learning strategies, and performance. Encouraging participation and strengthening motivation may help to enhance student performance in PBL.^{24, 25} Students participate either because of promotion focus or because they feel they have a prevention focus. Several studies have revealed the existence of better and confident students attending regularly and with enhanced motivation through PBL.^{26,27} It was also reported that participation that extends beyond active-learning exercises is likely to be most beneficial for all students.²⁸ The most powerful source is also influenced by vicarious experiences by observing others' performance, encouragement by others, and students' feelings. Possible strategies are to focus feedback on the competencies rather than on those that have not yet been mastered, to provide students with authentic tasks that fit their skill development level, and to create "safe" learning on the active learning motivation principle.²⁹

The limitation of the present study is that the result has relied heavily on students self-reports and participation.

CONCLUSION

The present study tested an integrated model of motivation, learning strategies, active participation, and student performance in active learning methods. The results suggest that the collection of data from students can identify students who are at risk for poor performance early in their training and enable the identification of areas for improvement and, consequently, can be used for areas of improvement. The questionnaire was used to provide students with an overview of the strengths and weaknesses of their study and motivation. The present study also suggests that participation mediates the relationships among motivation, learning strategies, and academic performance. Lastly, motivation in active learning and encouraging participation may help to enhance dental student performance outcomes.

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Author contribution

Al-Thomali Y- Study design, Final approval and, Drafting the manuscript, Data collection, Manuscript preparation, Data evaluation

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Table 1: Questionnaires used for the study

Question Category	Code	Question Code and Item description
Concepts regarding concern block.	A	<p>A1: Basic outlines regarding knowledge & skills Block was clear to me.</p> <p>A2: Requirements of successes in the Block were clear to me.</p> <p>A3: Guiding Block resources were clear to me (office hours for Faculty, references, etc.)</p> <p>A4: Block implementation & tasks that were asked to do were matching with basic outlines of the Block/Module</p>

Teaching staff members in concern block.	B	<p>B1: Staff members were committed to perfectly delivering the Block</p> <p>B2: Staff members who deliver this Block had a proper grasp of all contents of the Block.</p> <p>B3: Staff members were available for guidance& help during office hours.</p> <p>B4: Staff members were enthusiastic about their tasks.</p> <p>B5: Staff members were interested in my academic progress &were supportive of me.</p>
Active learning resources	C	<p>C1: Block contents were up to date & useful</p> <p>C2: Resources were available for this Block when needed.</p> <p>C3: Information technology utilization was effective for supporting me in the Block</p> <p>C4: Asking questions & developing my special thoughts were encouraged in this Block.</p> <p>C5: I was encouraged to express my best in this in this Block</p>
Active learning process	D	<p>D1: Tasks I was asked to do supported development of the intended knowledge and skills.</p> <p>D2: The amount of work in the Block fits the allocated credit hours.</p> <p>D3: I received my marks and assignments within a reasonable time.</p> <p>D4: Correction of my assignments & assessments was fair & convenient.</p>
Quality standards of active learning	E	<p>E1: Link between this Block & other Blocks in the curriculum was clear to me.</p> <p>E2: What I have learned in this Block is essential & will be utilized in the future.</p> <p>E3: This Block assisted me in improving my ability of thinking & problem solving instead of just recalling information.</p> <p>E4: This Block assisted me in improving my teamwork skills.</p> <p>E5: This Block assisted me in improving my effective communication.</p> <p>E6: I feel generally satisfied with the standard of quality in this Block.</p>
Problem-based learning in the small group integrated teaching of the concern block	F	<p>F1: In PBL, the descriptions have been satisfactorily achieved.</p> <p>F2: REASONING SKILLS & PROBLEM-SOLVING</p> <p>F2a: defined, and analyzed the problem from the scenario.</p> <p>F2b: Identified learning issues and proposed explanations.</p> <p>F2c: Identified learning objectives</p> <p>F2d: Expressed relevant viewpoints and demonstrated a constructive thinking process.</p> <p>F2e: Applied knowledge to new situations to solve problems and to reach decisions.</p> <p>F3: UTILIZING THE LEARNING RESOURCES:</p> <p>F3a: Utilized paper-based resource materials effectively</p> <p>F3b: Utilized electronic resources to gather information.</p> <p>F3c: Organized and prepared for small group sessions.</p> <p>F4: TEAMWORK & ATTITUDE</p> <p>F4a: Organized and prepared for small group sessions.</p> <p>F4b: Shared opinions with students and tutor actively.</p> <p>F4c: Shared all sources with group members</p> <p>F4d: Contributed to group harmony</p> <p>F5: COMMUNICATION SKILLS</p> <p>F5a: Were clear enough to be understood</p> <p>F5b: Accepted constructive feedback.</p> <p>F5c: Effectively used with presentation tools</p>

Table 2: Academic performance of dental students.

Parameters and batch	Frequency / mean results	P-value
Mean marks in Block Exam	1 st -yr 80.0 ± 6.9 2 nd -yr 90.4 ± 3.6 3 rd -yr 88.9 ± 8.3	ANOVA, F = 12.3, p = 0.03, Tukey Post Hoc = 1 st year < 2 nd and 3 rd year
Marks in PBL during the block	1 st -yr 72.8 ± 22.3 2 nd -yr 88.1 ± 8.3 3 rd -yr 80.7 ± 10.4	ANOVA, F = 9.7, p = 0.04, Tukey Post Hoc = 1 st year < 2 nd
GPA 2.0 to 2.4	1 st -yr 2 (10%) 2 nd -yr 0 3 rd -yr 0	NA
GPA 2.5 to 2.9	1 st -yr 8 (40%) 2 nd -yr 1 (5%) 3 rd -yr 1 (5.3%)	NA
GPA 3.0 to 3.4	1 st -yr 6 (30%) 2 nd -yr 0 3 rd -yr 3 (15.8%)	Chi-square test, p = 0.03
GPA 3.5 to 4.0	1 st -yr 4 (20%) 2 nd -yr 19 (95%) 3 rd -yr 15 (78.9%)	Kruskal Wallis ANOVA, p = 0.001, Man-Whitney U = 2 nd year > 1 st year, 3 rd year > 1 st year

PBL – Problem based learning, GPA - Grade Point Average.

Table 3: Participants' response regarding block concepts (A) and teaching staff members in concern block (B)

Q. Code	Batch	Strongly Agree	Agree	True Sometimes	Disagree	Strongly Disagree	95% (CI)
A1	1 st yr	3 (15)	13 (65)*	4 (20)	0	0	0.6 - 30.6
	2 nd yr	4 (20)	10 (50)*	4 (20)	2 (10)	0	2.5 - 37.5
	3 rd yr	2 (10.5)	1 (5.3)	9 (47.4)	5 (26.3)*	2 (10.5)	3.3 - 24.3
A2	1 st yr	2 (10)	12 (60)*	6 (30)*	0	0	3.2 - 23.2
	2 nd yr	12 (60)	3 (15)	5 (25)	0	0	38.5 - 81.5
	3 rd yr	2 (10.5)	5 (26.3)*	7 (35.8)*	3 (15.6)	2 (10.5)	3.3 - 24.3
A3	1 st yr	4 (20)	8 (40)*	4 (20)	4 (20)	0	2.5 - 37.5
	2 nd yr	7 (35)	7 (35)	4 (20)	2 (10)	0	14.1 - 45.9
	3 rd yr	1 (5.3)	1 (5.3)	3 (15.8)	7 (35.8)*	7 (35.8)*	4.8 - 15.3
A4	1 st yr	1 (5)	11 (55)*	8 (40)*	0	0	4.6 - 14.6
	2 nd yr	10 (50)	7 (35)	3 (15)	0	0	36.9 - 63.2
	3 rd yr	1 (5.3)	4 (21.1)*	8 (42.1)*	3 (15.8)*	3 (15.8)*	4.8 - 15.3
B1	1 st yr	2 (10)	3 (15)	9 (45)*	6 (30)*	0	3.2 - 23.2
	2 nd yr	4 (20)	5 (25)	8 (40)*	3 (15)	0	2.5 - 37.5
	3 rd yr	1 (5.3)	1 (5.3)	5 (26.3)*	7 (35.8)*	5 (26.3)*	4.8 - 15.3
B2	1 st yr	4 (20)	13 (65)*	3 (15)	0	0	2.5 - 37.5
	2 nd yr	8 (40)	7 (35)	4 (20)	1 (5)	0	18.5 - 61.5
	3 rd yr	1 (5.3)	5 (26.3)*	10 (52.6)*	2 (10.5)	1 (5.3)	4.8 - 15.3
B3	1 st yr	9 (45)	10 (50)	1 (5)	0	0	23.2 - 66.8
	2 nd yr	12 (60)	7 (35)	1 (5)	0	0	49.1 - 81.5

Table 3: (Continued)

Q. Code	Batch	Strongly Agree	Agree	True Sometimes	Disagree	Strongly Disagree	95% (CI)
B4	3 rd yr	1 (5.3)	3 (15.8)*	7 (35.8)*	4 (21.1)*	4 (21.1)*	4.8 - 15.3
	1 st yr	6 (30)	6 (30)	8 (40)	0	0	9.9 - 50.1
	2 nd yr	11 (55)	5 (25)	3 (15)	1 (5)	0	33.2 - 76.8
B5	3 rd yr	1 (5.3)	-	9 (47.4)*	7 (35.8)*	2 (10.5)	4.8 - 15.3
	1 st yr	3 (15)	6 (30)*	9 (45)*	2 (10)	0	0.6 - 30.6
	2 nd yr	8 (40)	6 (30)	5 (25)	1 (5)	0	18.5 - 61.5
	3 rd yr	2 (10.5)	3 (15.8)*	4 (21.1)*	4 (21.1)*	6 (31.6)*	3.3 - 24.3

* Significant at 95% Confidence Interval (CI) ($p < 0.05$), values in parenthesis represent %.

Table 4: Students' responses toward active learning resources (C) and active learning process (D)

Q Code	Batch	Strongly Agree	Agree	True Sometimes	Disagree	Strongly Disagree	95% (CI)
C1	1 st yr	1 (5)	10 (50)	9 (45)	0	0	4.8 - 15.3
	2 nd yr	6 (30)	8 (40)	4 (20)	2 (10)	0	9.9 - 50.1
	3 rd yr	3 (15.8)	3 (15.8)	3 (15.8)	3 (15.8)	7 (35.8)*	0.6 - 32.2
C2	1 st yr	1 (5)	14 (70)	5 (25)	0	0	4.6 - 14.5
	2 nd yr	2 (10)	10 (50)*	6 (30)*	1 (5)	1 (5)	3.2 - 23.2
	3 rd yr	2 (10)	0	6 (31.6)*	2 (10.5)	9 (47.4)*	3.3 - 24.3
C3	1 st yr	7 (35)	8 (40)	3 (15)	2 (10)	0	14.1 - 55.9
	2 nd yr	7 (35)	7 (35)	4 (20)	1 (5)	1 (5)	14.1 - 55.9
	3 rd yr	2 (10.5)	2 (10.5)	5 (26.3)*	7 (35.8)*	3 (15.8)	3.3 - 24.3
C4	1 st yr	7 (35)	6 (30)	6 (30)	1 (5)	0	14.1 - 55.9
	2 nd yr	5 (25)	7 (35)	4 (20)	4 (20)	0	6.0 - 43.9
	3 rd yr	1 (5.3)	1 (5.3)	5 (26.3)*	5 (26.3)*	7 (35.8)*	4.8 - 15.3
C5	1 st yr	6 (30)	11 (55)*	3 (15)	0	0	9.9 - 50.1
	2 nd yr	5 (25)	10 (50)*	4 (20)	1 (5)	0	6.0 - 43.9
	3 rd yr	6 (31.6)	2 (10.5)	2 (10.5)	7 (35.8)	2 (10.5)	10.7 - 52.5
D1	1 st yr	4 (20)	10 (50)*	6 (30)	0	0	2.5 - 37.5
	2 nd yr	8 (40)	6 (30)	6 (30)	0	0	18.5 - 61.5
	3 rd yr	1 (5.3)	0	4 (21.1)*	7 (35.8)*	7 (35.8)*	4.8 - 15.3
D2	1 st yr	2 (10)	2 (10)	9 (45)*	2 (10)	5 (25)	3.2 - 23.2
	2 nd yr	6 (30)	6 (30)	2 (10)	2 (10)	4 (20)	9.9 - 50.1
	3 rd yr	1 (5.3)	2 (10.5)	4 (21.1)*	2 (10.5)	10 (52.6)*	4.8 - 15.3
D3	1 st yr	1 (5)	3 (15)*	2 (10)	8 (45)*	6 (30)*	4.6 - 14.6
	2 nd yr	6 (30)	3 (15)	4 (20)	5 (25)	2 (10)	9.9 - 50.1
	3 rd yr	2 (10.5)	2 (10.5)	4 (21.1)	6 (31.6)*	5 (26.3)*	3.3 - 24.3
D4	1 st yr	2 (10)	4 (20)	9 (45)*	2 (10)	3 (15)	3.2 - 23.2
	2 nd yr	11 (55)	7 (35)	1 (5)	1 (5)	0	3.2 - 26.8
	3 rd yr	2 (10.5)	6 (31.6)*	4 (21.1)	2 (10.5)	5 (26.3)*	3.3 - 24.3

* Significant at 95% Confidence Interval ($p < 0.05$), values in parenthesis represent %.

Table 5: Students' responses towards quality standards of active learning in the concern block.

Q Code	Batch	Strongly Agree	Agree	True Sometimes	Disagree	Strongly Disagree	95% (CI)
E1	1 st yr	2 (10)	10 (50)*	4 (20)	3 (15)	1 (5)	3.2 - 23.2
	2 nd yr	2 (10)	7 (35)*	8 (40)*	3 (15)	0	3.2 - 23.2
	3 rd yr	2 (10.5)	2 (10.5)	4 (21.1)	9 (47.4)*	2 (10.5)	3.3 - 24.3
E2	1 st yr	9 (45)	3 (15)	7 (35)	1 (5)	0	23.2 - 66.8
	2 nd yr	10 (50)	7 (35)	2 (10)	1 (5)	0	36.9 - 63.2
	3 rd yr	3 (15.8)	2 (10.5)	5 (26.3)	8 (42.1)*	1 (5.3)	0.6 - 32.2
E3	1 st yr	1 (5)	10 (50)*	7 (35)*	1 (5)	1 (5)	4.6 - 14.6
	2 nd yr	5 (25)	4 (20%)	8 (40)	2 (10)	1 (5)	6.0 - 43.9
	3 rd yr	2 (10.5)	2 (10.5)	5 (26.3)*	5 (26.3)*	5 (26.3)*	3.3 - 24.3
E4	1 st yr	4 (20)	11 (55)*	5 (25)	0	0	2.7 - 39.4
	2 nd yr	4 (20)	8 (40)*	6 (30)	2 (10)	0	2.5 - 37.5
	3 rd yr	3 (15.8)	1 (5.3)	5 (26.3)	5 (26.3)	5 (26.3)	0.6 - 32.2
E5	1 st yr	3 (15)	7 (35)*	10 (50)*	0	0	0.6 - 30.6
	2 nd yr	2 (10)	9 (45)*	9 (45)*	0	0	3.2 - 23.2
	3 rd yr	2 (10.5)	1 (5.3)	4 (21.1)	10 (52.6)*	2 (10.5)	3.3 - 24.3
E6	1 st yr	3 (15)	6 (30)	10 (50)*	1 (5)	0	0.6 - 30.6
	2 nd yr	3 (15)	7 (35)*	9 (45)*	1 (5)	0	0.6 - 30.6
	3 rd yr	2 (10.5)	0	2 (10.5)	4 (21.1)	11 (57.9)*	3.3 - 24.3

* Significant at 95% Confidence Interval ($p < 0.05$), values in parenthesis represent %.

Table 6: Students' responses towards problem-based learning in the small group integrated teaching of the concerned block.

Q Code	Batch	Strongly Agree	Agree	True Sometimes	Disagree	Strongly Disagree	95% (CI)
F1	1 st yr	2 (10)	9 (45)*	9 (45)*	0	0	3.2 - 23.2
	2 nd yr	8 (40)	7 (35)	5 (25)	0	0	18.5 - 61.5
	3 rd yr	1 (5.3)	12 (63)*	3 (15.8)*	2 (10.5)	1 (5.3)	4.8 - 15.3
F2a	1 st yr	7 (35)	6 (30)	6 (30)	1 (5)	0	14.1 - 55.9
	2 nd yr	9 (45)	9 (45)	2 (10)	0	0	23.2 - 66.8
	3 rd yr	2 (10.5)	12 (63)*	4 (21.1)*	1 (5.3)	0	3.3 - 24.3
F2b	1 st yr	5 (25)	8 (40)	7 (35)	0	0	6.0 - 43.9
	2 nd yr	11 (55)	8 (40)	1 (5)	0	0	33.2 - 76.8
	3 rd yr	8 (42.1)	5 (26.3)	5 (26.3)	1 (5.3)	0	19.1 - 64.3
F2c	1 st yr	5 (25)	10 (50)	5 (25)	0	0	6.0 - 43.9
	2 nd yr	9 (45)	9 (45)	2 (10)	0	0	23.2 - 66.8
	3 rd yr	6 (31.6)	8 (42.1)	3 (15.8)	2 (10.5)	0	10.7 - 52.5
F2d	1 st yr	2 (10)	11 (55)*	6 (30)*	1 (5)*	0	3.2 - 23.2
	2 nd yr	8 (40)	6 (30)	6 (30)	0	0	18.5 - 61.5
	3 rd yr	3 (15.8)	6 (31.6)	9 (47.4)*	1 (5.3)	0	0.6 - 32.2
F2e	1 st yr	9 (45)	9 (45)	1 (5)	1 (5)	0	23.2 - 66.8
	2 nd yr	10 (50)	3 (15)	3 (15)	3 (15)	1 (5)	36.9 - 63.2
	3 rd yr	10 (52.6)	4 (21.1)	4 (21.1)	1 (5.3)	0	30.2 - 75.1

F3	F3a	1 st yr	7 (35)	8 (40)	5 (25)	0	0	14.1 - 55.9
		2 nd yr	10 (50)	5 (25)	5 (25)	0	0	36.9 - 63.2
		3 rd yr	7 (36.8)	6 (31.6)	6 (31.6)	0	0	15.2 - 58.5
F4	F3b	1 st yr	4 (20)	10 (50)*	5 (25)	1 (5)	0	2.5 - 37.5
		2 nd yr	8 (40)	5 (25)	6 (30)	1 (5)	0	18.5 - 61.5
		3 rd yr	3 (15.8)	5 (26.3)	11 (57.9)*	0	0	0.6 - 32.1
	F4a	1 st yr	11 (55)	6 (30)	2 (10)	1 (5)	0	33.2 - 76.8
		2 nd yr	10 (50)	10 (50)	0	0	0	36.9 - 63.2
		3 rd yr	5 (26.3)	9 (47.4)	4 (21.1)	1 (5.3)	0	6.5 - 46.1
	F4b	1 st yr	9 (45)	9 (45)	2 (10)	0	0	23.2 - 66.8
		2 nd yr	11 (55)	7 (35)	2 (10)	0	0	33. - 76.8
		3 rd yr	7 (36.8)	10 (52.6)	1 (5.3)	1 (5.3)	0	15.2 - 58.5
	F4c	1 st yr	10 (50)	7 (35)	2 (10)	1 (5)	0	36.9 - 63.2
		2 nd yr	10 (50)	8 (40)	2 (10)	0	0	36.9 - 63.2
		3 rd yr	6 (31.6)	10 (52.6)*	3 (15.8)	0	0	10.7 - 52.5
	F4d	1 st yr	9 (45)	8 (40)	3 (15)	0	0	23.2 - 66.8
		2 nd yr	15 (75)	5 (25)	0	0	0	74.2 - 75.8
		3 rd yr	8 (42.2)	6 (31.6)	3 (15.8)	2 (10.5)	0	19.9 - 64.3
F5	F5a	1 st yr	6 (30)	8 (40)	6 (30)	0	0	9.9 - 50.1
		2 nd yr	12 (60)	6 (30)	2 (10)	0	0	38.5 - 81.5
		3 rd yr	6 (31.6)	11 (57.9)*	2 (10.5)	0	0	10.7 - 52.5
	F5b	1 st yr	6 (30)	8 (40)	5 (25)	1 (5)	0	9.9 - 50.1
		2 nd yr	10 (50)	8 (40)	2 (10)	0	0	36.9 - 63.2
		3 rd yr	7 (36.8)	10 (52.6)	1 (5.3)	0	1 (5.3)	15.2 - 58.5
	F5c	1 st yr	5 (25)	10 (50)*	3 (15)	2 (10)	0	6.0 - 43.9
		2 nd yr	8 (40)	6 (30)	5 (25)	1 (5)	0	18.5 - 61.5
		3 rd yr	11 (57.9)	5 (26.3)	3 (15.8)	0	0	35.7 - 80.1

* Significant at 95% Confidence Interval ($p < 0.05$), Values in parenthesis represent %.