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3 **Why Did Medical Graduates Appreciate**

4 **Mentored Student Project? Perspectives of two**

5 **theories**

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8 **ABSTRACT**

Background: Medical doctors need to be competent in **professionalism** in addition to clinical skills. Therefore, Melaka Manipal Medical College has inculcated personal and professional development (PPD) projects into medical curriculums. The projects were in the form of Role Plays/Narratives/Creative writing and Mentored Student Project (MSP). Short terms outcomes of the projects were evaluated, and the research disclosed the positive effect of all PPDs on medical students. However, the long-term effect **was yet to be evaluated**. The findings of the previous study have not explained why those PPD projects are successful. While twenty fresh medical graduates were asked to reflect on one best learning experience as a qualitative evaluation of the programme, students' appreciation of MSP disclosed. This study aimed to explore the students' reflection to identify the reasons for their appreciation of MSP and the long-term effect of it.

Study design: Qualitative research

Methodology: Three reflective writings by fresh graduates were analyzed using the interpretive phenomenological analysis (IPA) approach. Students expressed their conscious perceptions about MSP in the form of words in their reflections. The researcher carefully read the reflections and interpret the words and phrases to catch the students' perception of MSP.

Results: The qualitative analysis revealed the reasons for participating in MSP and their appreciation about MSP. The main reason for students' participation in MSP was to fulfill the requirement of the medical programme although one student mentioned that she was interested in MSP due to the nature of MSP. Four themes were formulated as reasons for their appreciation of MSP: (1) having an opportunity to choose their research topic, (2) the presence of a mentor to guide each student group, (3) opportunity for the poster presentation on results of MSP and (4) satisfaction with the overall outcome of the MSP.

Conclusion: This study highlights the long-term impacts of MSP on students which matched with the expected learning outcomes set by Ministry of Education Malaysia. The analysis disclosed not only the outcome but also the process of MSP contribute for its success.

9

10 *Keywords: Mentored Student Project, Interpretive Phenomenological Analysis, Qualitative*

11 *study, Self Determination Theory of Motivation, Controlled value theories*

12 1. INTRODUCTION

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14 Medical doctors need to be competent in professionalism in addition to clinical skills [1].
15 Therefore, Melaka Manipal Medical College has inculcated Personal and Professional
16 Development (PPD) projects into medical curriculums [2, 3]. The projects were in the form of
17 Role Plays/Narratives/Creative Writing [2] and Mentored Student Project (MSP) [3].

18 All PPD projects were evaluated by both quantitative and qualitative methods just after the
19 completion of the projects and short terms outcomes were disclosed and most of them were
20 positive. [2, 3]. However, the long-term effect of MSP was not evaluated in that studies and
21 the findings have not explained why MSP was successful. In addition, the evaluators were
22 the faculty thus the evaluators and student's relation might influence the responses. Medical
23 graduates, on the other hand, were not controlled over by the designers and implementers of
24 PPD projects thus assumed to give more honest responses. In addition, medical graduates
25 must have more critical thinking then medical students. Therefore, the researchers did detail
26 analysis of medical graduates' voluntary expressions on their appreciation for MSP.

27

28 2. METHODS

29 The initial study includes 20 consented medical graduates who were identified by faculty as
30 capable to write reflection during their clinical years. They were asked to reflect on and write
31 the best learning activity during the undergraduate medical programme. Among them, five
32 students mentioned Mentored Student Project (MSP) as their best learning opportunities.
33 However, two graduates' reflection just mentioned MSP as their best learning opportunities.
34 Therefore, three reflections with detail accounts on the project were analyzed using
35 Interpretive Phenomenological Analysis (IPA) approach as it is a powerful tool to provide
36 significant information even from one case study [4]. Interpretive Phenomenological Analysis
37 (IPA) is a well-known qualitative approach to explore people's experiences [5]. IPA based on
38 three theoretical backgrounds namely phenomenology, hermeneutics and ideography.
39 Phenomenology is a study of people's experiences in the form of their conscious perception.
40 Peoples' perceptions must be interpreted from their words and the context thus hermeneutic
41 theories of interpretation of texts, words and human behavior involved in IPA. Ideography
42 taking into account the detail phenomena as well as how it was interpreted by a particular
43 person in a certain context thus relevant to IPA.

44 Medical graduates had experiences of Mentored Student Project (MSP) and they critically
45 analysed their experiences of MSP while writing reflections, thus their conscious perception

46 of MSP appear in their writings. The researchers read the first reflective writing several times
47 to get an overview of the participant's perception of their experiences with MSP without
48 influences of the researcher's theoretical knowledge [5, 6]. Each phrase of the reflective
49 writing was given a code based on the interpretation of the researcher on the graduates'
50 perception disclosed from that phrase. Later, the reflection was re-read and compared with
51 the codes, also re-coded whenever necessary. Later, themes were formed for the first
52 reflective account. After analysis of the first one, the other two reflections were analysed one
53 after another in a similar way. Themes were further explained by the motivation theories.

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56 **3. RESULTS**

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58 The three reflective accounts were written by one lady and two gentlemen medical
59 graduates. Their ethnicities were Malay, Indian and Chinese. Although the participants were
60 medical graduates, their reflection disclosed their experiences as a medical student, thus
61 codes and themes were formulated accordingly.

62 Analysis answered two questions:

63 3.1 Why did medical students participate in MSP?

64 3.2 Why did medical students express that MSP was the best learning activity?

65

66 **3.1 Why did medical students participate in MSP?**

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68 **3.1.1 To fulfill the requirement**

69 **3.1.2 It is different from the lecture**

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71 Two themes were formed as the reasons for medical student's participation in MSP. The first
72 theme is to fulfill the requirement of the undergraduate medical programme, and the second
73 theme is the interest in the learning activity that is different from the lecture (Table 1).

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81 **Table 1. Themes and codes of the reasons for participating in MSP**

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Theme	Quotes
To fulfill the requirement	“MSP was a compulsory project” (line 2 of Reflection 2) “I participated in MSP because it was one of the criteria to sit for my 2nd-year university examination” (line 2 & 3 of Reflection3)
It is different from the lecture	“It was a compulsory project and I was very excited to learn something different from what I was studying in lectures” (line 4 & 5 of the Reflection 1)

83

84 Although there were two themes related to reasons for participation it was obvious that the
85 main reason was to fulfill the requirement to sit for the final exam of the 2nd-year University
86 exam.

87

88 **3. 2 Why did the medical students express that MSP was the best learning**
89 **activity?**

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91 Four themes can be formulated as the answers to the above research questions. They are:

92 3.2.1 Having an opportunity to choose their research topic

93 3.2.2 The presence of a mentor to guide each student group

94 3.2.3 Opportunity for the poster presentation on the results of MSP.

95 3.2.4 Satisfaction with the overall outcome of the MSP

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97 According to the above themes, Medical graduates expressed their appreciation for both
98 outcomes and the process of MSP. The MSP process they appreciated are 1. The
99 assignment of mentor that provides competency support to them; 2. The students are
100 allowed to choose a topic by themselves. 3. The students appreciate the arrangement for the
101 dissemination of the project findings in front of the seniors.

102

103 **3.2.1 Having an opportunity for the medical student to choose their research topic**

104 When the student was allowed to choose their MSP topic, they engaged in learning activity
105 like reading books, searching the internet, sharing information among group members,
106 discussion and reaching to the consensus on a topic of their MSP. The student can choose a
107 topic of their interest, thus, their interest in the research topic further facilitates their

108 motivation in doing research. Emotion/satisfaction with the activity during the planning and
109 implementation stage was also revealed in the reflection.

110 The following extracts showed their perception of MSP and engagement in learning
111 activities.

112

113 “We browse through multiple websites to search for data and information which will help us
114 in our project. After finalized, we exchanged information among ourselves and decided on
115 this topic. (line 7, 8 & 9 of the **Reflection 2**).

116 “This MSP made us do research, read from different books, surf the net in order to gather
117 information. I like this opportunity because it made me read many books and do research as
118 **the topic was so interesting**” (line 5 & 6 of the **Reflection 3**)

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120 **3.2.2 The presence of a mentor to guide each student group**

121 All three medical graduates reflected and appreciated the guidance of the mentor, interaction
122 with the mentor to plan for the research and to seek guidance whenever necessary. The
123 activity improved the lecturer-student relationship thus the student still remembers the
124 mentors’ name. Proper division of tasks, fruitful discussions among the group members and
125 the mentor lead to satisfaction with the activity during the planning and implementation
126 stage. The following extracts are the evidence.

127

128 “I like this learning opportunity as I learnt something new, worked well with my group
129 members, divided our duties, and interacted with our mentor Dr.... to obtain input and
130 guidance regarding our study”. (line 16 & 17 of the **Reflection 1**)

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132 “In this project, 4 of us in a group under the guidance of our mentor Dr.... sat down and plan
133 for the project. We discussed and read on various articles online”. (line 4 of the **Reflection**
134 **2**)

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136 **3.2.3 Opportunity for poster presentation on results of MSP**

137 The medical graduate reflected and expressed their feeling of being privileged to participate
138 in the poster presentation because significant people like Dean, deputy Dean and lecturers
139 attended the presentation. It is also challenging to answer the questions by the audience.

140

141 “After preparation for almost 2 months, finally, we had to present our poster in a formal
142 poster presentation... Other medical students were also very enthusiastic in preparing and
143 presenting their poster” (line 13 & 16 of **Reflection 2**)

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145 “MSP presentation was done in the present [presence] of College Dean and Associate Dean
146 along with lecturers and doctors from different places. During this event, many different
147 questions were thrown into me from the different people and I answered most of them with
148 confidence as I had enough knowledge about it; because I had done enough reading and did
149 thorough research on the topic” (line 9, 10,11 & 12 of the **Reflection 3**)

150

151 “Other students also like this opportunity because it is challenging and interesting for them”
152 (line 13 of the **Reflection 3**)

153 From the above extracts of the medical graduates’ reflections, their emotions and
154 satisfaction during the MSP were obvious.

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156 **3.2.4 Satisfaction with the overall outcome of the MSP**

157 The medical graduate reflected and expressed their satisfaction with the overall outcome of
158 the MSP. One student wrote: “All the hard work paid off well and we were all happy with the
159 outcome and learnt a lot”. (Line 13 **Reflection 2**)

160 There were three sub-themes related to student’s satisfaction

- 161 - Transformed the student
- 162 - Value of teamwork
- 163 - Gained extensive knowledge

164 *3.2.4.1 Transformed the student*

165 One medical graduate said MSP transformed her to be an open-minded person. The
166 following phrases are extracted from her reflection.

167

168 “I was more open-minded regarding my studies in Manipal as I [realized] not only I had to
169 study the theory components of the syllabus but I need to participate in activities like MSP”
170 (line 10 of the **Reflection 1**)

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172 *3.2.4.2 Value of teamwork*

173 Another medical graduate mentioned an insight into the value of teamwork and the
174 knowledge and skills he gained from MSP. He wrote:

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176 “It [MSP] has taught me about health issues in India, government policies of India and also
177 teamwork is the secret to success in a group work”. (line 14 of the **Reflection 2**)

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179 Similarly, one student wrote: “This informative e-learning tool (MSP) further teaches us as
180 future doctors to work together as groups for the same goal. Building bonds as we go along.
181 (17 & 18 of the **Reflection 3**)

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183 3.2.4.3 Gained extensive knowledge

184 Another student commented that MSP is a properly designed learning activity to gain
185 extensive knowledge of the different subject areas.

186

187 “MSP is designed not only to gain extensive knowledge on a topic of choice, but also to
188 allow everyone to participate & gain insight into many other projects as well.”. (line 15 & 16 of
189 the **Reflection 3**)

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192 4. DISCUSSION

193 ***Benefit of MSP***

194 This study supports the short-term outcome of MSP mentioned by Devi et al.'s study [3] and
195 also shows long-term impact on medical graduates such as transformed to an open-minded
196 person, appreciation on the benefit of teamwork, development of team spirit, friendship
197 between medical graduates.

198

199 **Self-determination theory and Control-value theory**

200 Self-determination theory (SDT) is a theory of motivation in learners [7,8]. Motivation could
201 be either extrinsic or intrinsic. Extrinsic motivation is driven by external factors such as
202 rewards, or punishments. Meanwhile, intrinsic motivation is driven by the learner's interest,
203 or inherent satisfaction [7]. SDT asserted that a person must fulfill three psychological needs
204 namely autonomy needs, competency needs, and relatedness needs to develop intrinsic
205 motivation [8]. Extrinsic motivation can be transformed as intrinsic motivation through the
206 internalisation process [7, 9].

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208 Control-value theory is an integrative approach to understand the emotions of the learner in
209 the teaching-learning process [10]. Control appraisal is the learner's cognitive appraisal of
210 their self-perceived controllability to the activities and outcomes such as self-efficacy,
211 expectancies and competency perceptions [10]. Meanwhile, value appraisal is the learner's
212 appraisal of the subjective value or importance of that activity and outcome such as
213 usefulness or importance [10]. These control and value cognitive appraisals are linked to the
214 achievement emotions [10]. Achievement emotions are derived from the learners'

215 achievement in their activities or outcomes of their performances, which usually present in
216 the academic and clinical settings in medical education [10]. In summary, Control-Value
217 theory pointed out that the learners' cautious appraisal on the control and value of the
218 learning activity leads to achievement emotion [10-13]. This achievement emotion further
219 influences the learning behavior and intrinsic motivations [10-13].

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221 **The two reasons of medical students to participate in the MSP** were explained by the
222 Self-determination theory of motivation [7, 8]. The first theme, to fulfill the requirement is
223 considered as extrinsic motivation as it is influenced by external regulation. The second one,
224 interest in the nature of learning activity, is considered as intrinsic motivation as it is
225 regulated by the internal drive. However, all three reflections disclosed that extrinsic
226 motivation leads to initial participation. Later, they satisfied with the activity and motivated to
227 participate further thus it became their best learning activity. It is called an internalization
228 process [9]. It also shows the importance of external motivators for the successful initiation
229 and implementation of a new learning activity.

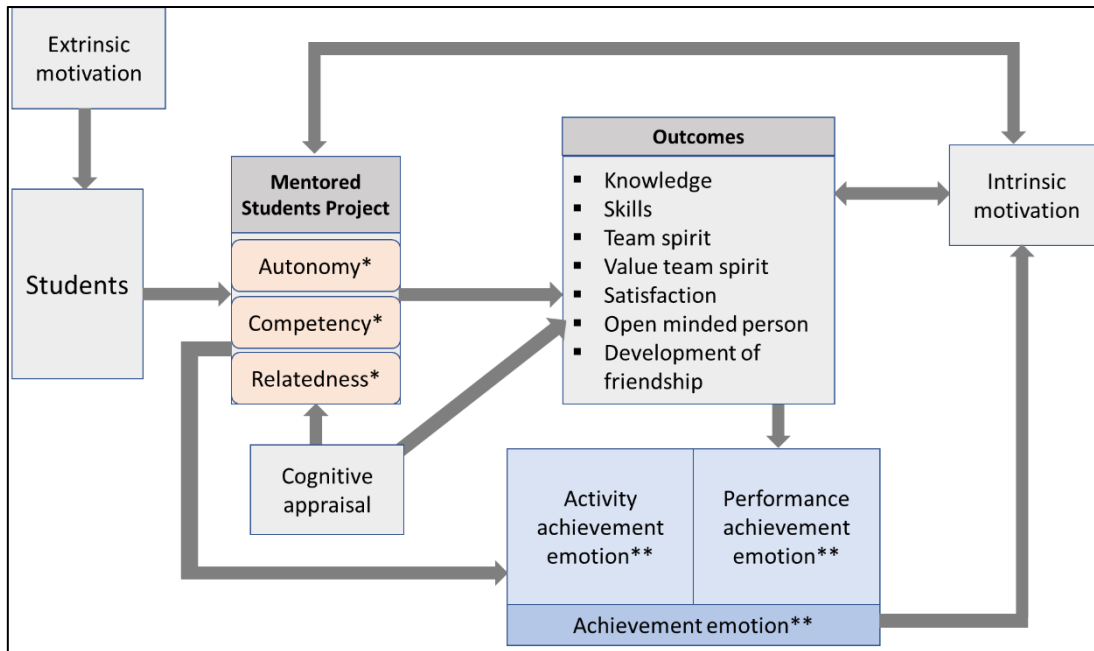
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231 **The factors that influence the medical graduates' appraisal of MSP** as the best learning
232 opportunity can be explained by two theories namely Self Determination Theory of
233 Motivation (SDT) [7, 8] and control-value theory [10-13]. (See fig 1).

234 The reflection of MSP in this research provides evidence that students are more motivated to
235 do the project as they are allowed to choose their own topics. AMEE guide 59 mentioned
236 that by allowing the student to choose their research topic, their psychological needs called
237 autonomy needs was fulfilled [7]. The presence of a mentor makes students interact with the
238 mentor and get the input for their work. That means they have competency support from
239 mentor thus competency needs fulfilled [7] leading to motivation and satisfaction. The good
240 support of the mentor and cooperation of the group members the study participants got are
241 the opposite of hindering factors for the success of MSP mentioned in Devi et al [3]. The
242 opportunity for poster presentation in front of the Dean, Deputy Dean and lectures made
243 them feel related to the significant person in the institutions. Thus, their relatedness
244 psychological need was fulfilled to develop intrinsic motivation. Intrinsic motivation is a
245 quality motivation leading to the good learning outcome [14].

246 For example, the student 's expression "it made me read many books and do research as
247 the topic was so interesting" indicates their positive emotion during the learning activity that
248 leads to intrinsic motivation to learn further. It can be called as an activity achievement
249 emotion [10]. Overall satisfaction with the outcome of the MSP can be called as performance
250 achievement emotion [10].

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254 **Fig. 1. Reasons for the success of MSP explained by two motivation theories**

255 * Self Determination Theory of Motivation, ** Control-value theory

256 From SDT perspectives MSP fulfilled students' autonomy, competency & relatedness needs
257 and from Control-Value theory perspectives it gave the students both activity achievement
258 emotion and performance achievement emotions that's why it became the best learning
259 opportunity. The researcher can catch students' achievement emotions and motivation from
260 Texts in students' reflection thus able to interpret their experiences of MSP correctly.
261 Therefore, this study supports the feasibility of reflective writing as a data collection tool and
262 assessment of the student's educational attainment [15, 16].

263

264 5. CONCLUSION

265 This study highlights the long-term impacts of MSP on students which matched with the
266 expected learning outcomes set by Ministry of Education Malaysia. The analysis disclosed
267 not only the outcome but also the process of MSP contribute for its success.

268 **COMPETING INTERESTS**

269 Authors have declared that no competing interests exist.

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272 **CONSENT**

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274 Informed consent was obtained from the medical graduates.

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276 **ETHICAL APPROVAL**

277

278 Ethical approval was obtained from the Melaka-Manipal Medical College, Medical Ethics
279 Committee.

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