

Academic Development Programme for Teaching Assistants: Its Influence on Teaching Mindset and Impact on Learning Experiences

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ABSTRACT: Nanyang Technological University Singapore (NTU) runs a semester-long Teaching Assistants Programme (TAP) aimed at preparing PhD students for teaching assistant (TA) duties. This course provides participants with a student-centred, research-based framework that encourages them to be more conscious about what they do as teachers. The principal intention of the course is to develop TAs who can both analyse their own practice and make informed choices about how they teach.

The research looks at the: (1) influence on TAP graduates' mindset with regards to their own teaching, (2) impact of their students' perception on their learning experiences, and (3) the factors influencing the transfer of learning from the TAP to the classroom

Through focus group discussions (FGD), the TAP graduates were asked a range of questions on their initial perceptions on teaching and learning and how they have evolved because of the course. They were asked to describe how the course has influenced their mindsets, the impact of the course on their students' learning experiences and their perception of how the institution views their training. To triangulate the TAP graduates' perceptions of the impact of the TAP course on their students' learning experiences, we use information from the standard NTU Student Feedback on Teaching survey (SFT) administered every semester across all NTU courses.

1 INTRODUCTION

Academic Development Courses (ADCs) have generally been found to have an impact on teachers' awareness of their teaching approaches and methods (Ebert-May, Derting, Henkel, Maher, Momsen, Arnold & Passmore, 2015). Changes to conceptions of teaching and the adoption of more student-centered approaches to teaching are part of this impact (Gibbs & Coffey, 2004; Postareff, Lindblom-Ylance & Nevgi, 2008).

The extent to which these changes occur, however, can be dependent on a number of factors such as ADC structure (Ebert-May, et.al., 2015; Gibbs & Coffey, 2004; Postareff, et. al., 2008), individual teacher identity (Winter, Turner, Gedye, Nash, & Grant, 2015), institutional culture (Gibbs & Coffey, 2004), subject discipline (Lueddeke, 2003) and teaching context (Ebert-May, et.al., 2015; Lindblom-Ylance, Trigwell, Nevgi & Ashwin, 2006).

In response to student feedback about the quality of their learning experiences at NTU, one of the key ADCs introduced was the University Teaching for Teaching Assistants Programme (TAP). Since its introduction in 2011, there has been no systematic study done to ascertain the effectiveness of the programme on student learning experiences at NTU.

The purpose of this pilot study is to ascertain the extent to which TAP fulfils its programme learning outcomes, the extent to which the learning is transferred to the classroom and the factors influencing the transfer of learning. The research aims to answer three questions:

- What is the influence of the TAP on TAP graduates' mindsets towards their own teaching?
- What are the factors influencing the transfer of learning from the TAP to the classroom?
- What is the impact of the TAP on the perceived learning experiences of students of TAP graduates?

2 BACKGROUND

The University Teaching for Teaching Assistants Programme (TAP) aims to prepare PhD students studying at NTU for teaching assistant responsibilities at NTU and to develop them as future faculty.

This compulsory 15-hour programme provides participants with a student-centred, research-based framework that encourages them to be more self-conscious about what they do as teachers. A principle intention of the course is to develop TAs who can both analyse their own practice and make informed choices about how they teach.

While there are a total of 8 modules (5 core and 3 electives), course participants will have to pass only the 5 core modules to meet a requirement for their PhD Qualifying Examinations. Each module is 3 hours long. Course participants are assessed over the course of the semester through a series of formative assignments that culminate in the delivery of a 10-minute microteaching lesson. There are three possible outcomes of the TAP:

- Pass – Recommended to teach;
- Pass – Not recommended to teach;
- Fail

The 3 elective modules are optional and are only open to those who obtain a “Pass – Recommended to Teach grade” in their final microteaching assessment. Course participants who successfully complete all 8 modules qualify for the University Teaching for Teaching Assistants Certificate.

3 METHODOLOGY

3.1 Method

To answer the first two research questions, a semi-structured focus group discussion (FGD) was the method selected to obtain data. The reason for choosing this approach is that it has the potential to encourage interaction amongst the respondents eliciting deeper responses than those available from written surveys or questionnaires (Hennink, 2014).

To answer the final research question, we decided to use information from the standard NTU Student Feedback on Teaching survey (SFT) administered every semester across all NTU courses. The SFT, adapted from Chickering & Gamson’s Seven Principles (Chickering & Gamson, 1987), provides us with information from students on their experience of the teaching of the TAs. The SFT was selected as the preferred instrument because data is readily available and because we are mindful of taking up class time and subjecting students too many surveys.

3.2 Study Population and Participant Recruitment

TAP graduates from the previous semester who attained a “Pass - Recommended to Teach” grade were first identified. The reason for selecting these graduates as opposed to the current semester’s graduates is because graduates will have no dependent relationships with the researchers as they have already passed the course. A purposeful sampling technique was used to select the respondents by discipline. Emails were sent out to these graduates to invite them to participate in the focus group discussions. Subject discipline was used to select the sample because disciplinary differences have been found to have an influence on teacher mindsets and their teaching approach (Lindblom-Ylance, et. al., 2006; Lueddeke, 2003).

To obtain SFT data, we emailed all 17 schools at NTU requesting for the SFT data of their teaching assistants.

3.3 Data Collection and Analysis

We conducted the FGD session with four respondents, all coming from the STEM disciplines. Prior to the start of the FGD session, respondents were given the information sheet and consent form to read. Before the respondents signed the consent form, the interviewer clarified that they are participating in the FGD of their own free will and are free to stop participating in the study completely or choose not answer any question at any time without penalty, prejudice, negative consequences, repercussion, or disadvantage. To ensure that pertinent information is not lost, the FGD session was audio recorded and the conversations transcribed. The data was read once to obtain a general overview and thereafter organised into themes.

We received 53 SFTs of 17 teaching assistants from one school from the STEM discipline. A review of the SFT data indicated that while TAs might be assigned to teach several tutorial groups, the tutorial groups were all within one course. Each tutorial group varied in size from 10 to 42 students and SFT

response rates also varied widely from 2 to 13 responses for each group. To prepare the data for analysis, an overall mean SFT score is computed for each TA as follows:

$$\text{TA Overall Mean SFT Score} = \frac{\sum_i^n (\text{Mean SFT Score}_i \times \text{Number of Response}_i)}{\sum_i^n \text{Number of Responses}_i}$$

Where,

n = the total number of groups taught by the TA

i = the ith group of the TA

We noted that there were three groups of TAs – those who graduated from TAP before teaching their class; those who graduated from TAP after teaching their class: and those who attended the TAP course concurrent with teaching their class. An analysis of variance and post-hoc test was conducted using SPSS Version 23.

4 FINDINGS & DISCUSSION

Respondents of the FGD are all from the STEM disciplines and are unanimous in stating that the TAP had changed their mindsets towards teaching and learning. The FGD respondents indicate that before the TAP, they would have adopted teacher-centered approach to teaching while after the TAP, they will adopt a more student-centered approach to teaching. The respondents also suggest that this change is not just occurring within their minds, but also in their practice. The responses indicate that the graduates are making attempts at applying the concepts discussed within the classes they teach. For example, TA1 suggests that he is using scaffolding and Socratic questioning techniques to help learners work through complex problems. Responses provided by this TA also indicates that he makes attempts at building relationships with his students to engender trust, which he feels results in greater engagement within his classrooms. Furthermore, rather than only focusing on factual questions provided for the tutorials, this TA develops a supplementary set of questions to help his students apply the knowledge to different contexts. The change in mindsets and teaching approach is possibly a result of three factors.

First is the nature of the TAP which is designed to encourage reflection on learning experiences and teaching practices. According to Postareff et. al. (2008), ADCs aimed at affecting the underlying conceptions of teaching and learning will have a greater effect on teaching approaches. Respondents indicate that the changes in their mindsets and teaching approaches (whether actual or intended) are primarily the result of going through the course. For example, TA2 alluded that the course, through its use of formative assessments required her to think about how she was communicating her ideas and why certain teaching practices did not work.

“I think from the beginning to the end you push us to think in this way. For example, in the assignment we need to have the learning outline. By reading the feedback, I know that I did not to make myself sufficiently clear to be understood by others. And for each subsequent assignment, I need to make myself clearer and clearer. Then there is the microteaching. I rehearsed more than four times, yet there are still some [role play] students who cannot understand a particular point and I need to find ways to make it clear and to get them engaged so that they do not feel that it is too boring. So it is quite challenging. After the assignments and the microteaching, the feedback I received totally changed how I think of teaching. The way I do teaching totally changed.” – TA2

Second, while the TAP is compulsory for all PhD students at NTU, those who have completed equivalent courses are granted exemptions. Assuming that only those who have completed similar courses would have already been teaching (thus the need to take those courses in the first place), this means that most of the TAP participants can be assumed to have very little or no teaching experience which, according to Gibbs & Coffey (2004) has the potential to make them more amenable to adopting a student-centered teaching approach.

Third, the TAP has a positive impact on the respondents because it exposes them to alternative teaching and learning experiences. Winter et. al. (2015) studied satisfaction levels of an ADC for PhD students and found higher levels of satisfaction amongst international PhD students than for the local (UK) PhD students. They postulated that this might be due to the exposure to learning experiences that are different from what they had experienced prior to attending the TAP.

“Before this class I know only a few techniques to teaching for example: use powerpoint, focus on the textbooks, check attendance ... can't do anything more to attract their attention.” – TA3

“This course is structured differently from the other classes I have been to. It is not about knowing something and deliver what you know to make them understand. For the TA classes, each class is organised with LOs, activities. You engage in the activities to learn, then the teacher will clarify any misunderstandings. I think the classes are examples for us to learn how to teach.” – TA4

However, while the respondents' self-reports suggest the adoption of more student-centered approaches to teaching, the results from the SFT scores seems to be less promising. An Analysis of Variance of the overall mean teaching scores suggest that there has been no significant differences in the learning experience for classes taught by TAP graduates, TAP participants and non-TAP participants, $F(2, 14) = 1.637$, $p = 0.23$. Post-hoc analysis using Tukey HSD also indicated no significant differences amongst the three groups.

While the result could suggest that in practice, the TAP has had no impact on the students' learning experiences, it has to be remembered that the transfer of learning is not linear because learning transfer can be influenced by a number of factors. Results of the FGD suggests that in the case of the respondents, institutional culture appears to have limited the transfer of learning from the TAP to the classroom.

The first cultural factor highlighted is the factual focus of the examinations and assessments. Respondents were unanimous in suggesting that the focus on facts rather than application in the assessments limits the extent to which they can adopt student-centered learning approaches.

“... for my field, all the assessments, all the exams are primarily about memorisation – just about regurgitation of facts. Only one or two essay questions are application ... Also, most of the exams, about 90% is MCQ based. Either yes or no; true or false.” – TA1

“... no matter what teachers do, students are still under pressure to pass the exams.” – TA2

“... if the exams do not change, if the way of evaluating students' performance does not change, it cannot motivate students to learn more things besides the exam questions.” – TA4

Such concerns are valid and studies suggest that because of the need to deliver results in terms of student grades, teaching innovations generally take a back seat (Cheah, 1998; Tan 2006; Tan, 2008) because students would prefer the traditional approach of relying on the teacher for model answers and solutions (Cheah, 1998). As TA1 said:

“I will use the spectre of the exams to motivate the students to learn. Usually when the students hear the word exams, they will open their eyes. So you make use of it to get their attention to think about what you need them to think. I think it works quite well to get students' attention.” – TA1

This cultural emphasis on examinations appear to have made the TAs question the extent to which they should adopt student-centered teaching approaches.

“... no matter how much we change, if the assessment is not aligned, it causes the whole thing to break down.” – TA1

“... it is difficult to say whether students really value the activity. I think the whole thing is related to the system.” – TA2

Such concerns about the need to deliver results may also be exacerbated by the perceived power distance between faculty and TA which might also be exacerbated by the relatively higher levels of uncertainty-avoidance (Hofstede, 1983) amongst the respondents.

“Because the lab session is designed by the professor and I should follow the instructions, I do not have the right to design the course or the outcomes. My role is only to address the students' problems.” – TA4

“I agree with TA4... We do not have much right to make adjustments to the outlines or the techniques. It will be challenging – dangerous – because students may not be satisfied with your method because they need to pass the exams.” – TA2

Kreiser, Marino, Dickson & Weaver (2010) found that high power-distance is negatively correlated with the risk-taking and proactive behaviours. The low risk nature of the changes to the respondents’ teaching approaches can be inferred through the comments made when they are asked about the changes they made to their teaching since taking the course.

“I will probably start off the lesson a bit differently, probably try to interact with them outside the classroom, talk to them, try to get to know them so that they will feel more at home in the class and begin to become more talkative and answer questions more readily.” – TA1

“...I will not make very large changes. Smaller ones I will make, such as feedback...” – TA2

5 LIMITATIONS

The findings of the study need to be interpreted with caution as it cannot yet be generalised to the rest of the NTU population. First, the FGD conducted only involved four TAP graduates from the STEM disciplines. NTU has courses from both the STEM and non-STEM disciplines. Involving TAP graduates from the non-STEM disciplines has the potential to provide a different picture because literature suggests that disciplinary differences related to teaching and learning exist (Lueddeke, 2003). Second, only one STEM school responded with the SFTs of only 17 TAs. Considering that each TAP cohort has an average attendance of 260 participants from all schools, SFTs of 17 TAs from one school is unlikely to be representative of the performance of TAP graduates. Furthermore, we only have the SFT scores for one of the TAs who participated in the FGD. As a result, we are unable to make full use of the FGD to interpret the SFT result and vice-versa. Finally, the SFT response rates are relatively low and fail to meet the adequacy guidelines proposed by Nulty (2008).

6 CONCLUSION

ADCs have generally been found to have an impact on teachers’ conceptions of teaching and the adoption of more student centered approaches to teaching. This pilot study of an ADC for Teaching Assistants at NTU suggests that while the ADC has been effective in changing TAs’ mindsets about teaching and learning, there appears to be limited impact on the student learning experiences. The results also suggest that institutional factors such as assessment structure and the perceived power-distance between faculty and TAs might possibly be factors limiting the effective transfer of learning. While this study has limitations, particularly with regards to the impact of the TAP on the perceived learning experiences of students of TAP graduates, it provides us with insights into the possible factors influencing the transfer of learning from the TAP to the classroom. Future research drawing from a wide base of TAs and students is needed to ascertain the accuracy of this pilot study.

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