Relationship between Gender, Year Levels, Assignment Completion and Academic Achievement for College Students

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ABSTRACT: In order to effectively enhance students' learning, doing assignments is an accepted practice of improving content knowledge and self-regulated skills. However, individual differences may impact students' assignment behaviors. This study examined the relationship between specific assignment variables (i.e. amount of assignment completed, time spent on assignment), gender and grade level. The participants were 786 undergraduate students from five universities in Thailand. A two-way analysis of variance showed that differences of gender and year levels significantly affected the amount of assignments completed and time spent on assignments. The female students completed significantly more assignments and had more time spent on assignment than the male students. For year level differences, freshman complete more amount of assignments than other students (sophomore, junior and senior). On the other hand, junior and senior students spent more time on assignments than sophomores. Using a hierarchical regression analysis, gender and year levels were significantly associated with academic achievement. Moreover, the results revealed that the number of assignments completed was a strongest predictor on academic achievement and had positive associations with academic achievement after controlling gender and year level variables. Our findings then suggest there are differences between gender and undergraduate year levels in terms of assignment completion which may then affect students' learning outcome.

KEYWORDS: Assignment completion, Academic achievement, Individual differences, Thailand, Undergraduate year levels

1 Introduction

Over several decades, many researchers have asked, "Do assignments boost students' academic achievement?" In previous studies, the researchers investigated assignment aspects for middle and high school, including how many assignments were completed, and the amount of time spent on assignments. The results show that students finishing assignments are likely to achieve high academic performance (Bembenuty & Zimerman 2003; Cadime, Cruz, Silva, & Ribeiro 2017; Falch & Rønning, 2012; Núñez et al. 2014, 2015c; Planchard, Daniel, Maroo, Mishra, & McLean 2015; Rosário et al. 2015a; Valle et al. 2016; Xu, Fan, Du, & He 2017). Specifically, novice students with lower performance considerably improved academic attainment (Grodner & Rupp 2013). Recent research has also revealed the reason for students completing assignment is that they want to get higher grades (Rosário et al., 2015), and the more assignments students do, the better they do on exams (Cadime et al. 2017; Núñez, Fernández, Rosário, & Epstein 2015). Moreover, doing assignments encourages students to manage their time and environment, take responsibility, and seek help from other people or sources (Xu 2010, 2011, 2014). Additionally, students completing assignments have higher school retention rates and lower failure rates (Grodner & Rupp 2013).

The amount of time spent on assignments is another indicator that impacts students' academic achievement. Prior research shows that the more time students invest on assignments, the higher their academic achievement (Núñez et al. 2015; Rawson, Stahovich, & Mayer 2016). However, some studies claim that taking a longer time to do assignments did not improve academic achievement (Trautwein 2007; Trautwein et al. 2009). A possible reason for lower performance is that spending a long time on homework might suggest that students lack knowledge and skills in doing assignments (Trautwein et al. 2009). Accordingly, amount of time spent is a point of contention in the research. As mentioned above, the amount of assignments completed and time

spent on assignments are factors for enhancing students' academic performance. Therefore, this study focuses on those factors for undergraduate students as there are few such studies focused on this population.

1.1 Assignments in universities

Assignments are an essential tool not only for high school students but also for college students (Kitsantas & Zimmerman 2009; Rawson et al. 2016). Assignments in universities refer to coursework either inside or outside the classroom in many kinds of assignments, including projects, presentations, discussion, and writing. Traditionally, higher education students in the US are assigned homework each day (Snyder 1998) but more importantly, assignments are included in the total grade calculation along with class participation and examination scores (International Student n.d.; Olson 2016). Therefore, students need to allocate their time to finish assignments (Rawson et al. 2016). Compared with secondary school teachers, college instructors do not follow or check assignment completion, and for this reason, college students need to take more responsibility (Kitsantas & Zimmerman 2009). In the UK, assessing students' achievement on assignments has rapidly grown. Students show more desire to be evaluated in term of assignments, compared with evaluation in form of test alone (Richardson 2015). In addition, an assessment approach using only assignment or mixing assignments with examinations provides better learning outcomes accuracy than assessing with tests alone (Richardson 2015). In higher education in Thailand, instructors assign tasks in many forms similar to the US. Moreover, Assignments are a major part of assessing academic performance (Tuamsuk 2013). Since most of Thai students have low to medium academic achievement, instructors stress assigning tasks to enhance students' knowledge and skill. For the reasons mentioned above, assignments are an important element of educational system around the world, especially Thailand. The present study will deal with assignment completion aspects for Thai college students.

1.2 Effects of assignment completion on academic achievement by gender, year levels

Bronfenbrenner (1989) has stated that the individual differences such as gender and age are key issues for developing learning environment in different context. Interestingly, personal factors can affect choices of participating in learning activities Bronfenbrenner (1989). Consequently, assignment completion may be reflected differently by gender and year levels. Most previous studies comparing gender with assignment completion focused on middle and high school students, except for a study by Kitsantas and Zimmerman (2009) that investigated such relationships in US university students. However, their study showed no gender differences on assignment completion for college students. Regarding middle and high school students, to extend new outcome for college students, researchers have reported that females completed assignments and spent more time on assignment than males (Mau & Lynn 2000; Núñez et al. 2013; Xu 2010b). In terms of year level differences, there are not any studies focusing on time spent on assignment for college students. As such, we will compare year levels with time spent on assignment for college students. In the results from exploring elementary to secondary school levels, students are less likely to do assignments when they are in higher grade levels, and the longer time is likely related to more difficult content and more complex tasks (Kackar, Shumow, Schmidt, & Grzetich 2011). Furthermore, recent research has suggested that assigning tasks is more suitable for older students than younger students (Valle et al. 2016).

2 Purpose and research questions

The purpose of this study was to identify the relationships between undergraduates' assignment completion and academic achievement in different gender and year levels. The specific research questions were:

- How do assignment completion variables (amount of assignments completed, time spent on assignments), gender, year levels and academic achievement relate to each other?
- Do gender and year levels impact the assignment completion aspects?
- Do assignment completion aspects impact academic achievement for college students?

3 Methods

3.1 Participants and Procedures

The samples of this study comprised of 1106 undergraduate students from five universities in Thailand, including freshman (49.7%), sophomore (18.7%), junior (19.8%) and senior (11.7%). The participants were studying in different academic departments (education, humanities, science, and social science). Table 1 shows descriptive statistic of this study.

Table 1: Frequency of gender and year levels in the study

Year levels	Male		female		total	
	number	percent	number	percent	number	percent
Freshman	114	28.1	436	62.1	550	49.7
Sophomore	108	26.7	99	14.1	207	18.7
Junior	113	27.9	106	15.1	219	19.8
Senior	70	17.3	60	8.5	130	11.7
	405	36.6	701	63.4	1106	100

3.2 Measures

We used questionnaires adapted from prior research (NELS: 88 and studies by Cooper et al., 1998). Based on self-reports, students assessed themselves pertaining to amount of assignments completed (2 items; e.g. in the main subject in your major, usually, how many tasks do you complete from the assigned homework?) and time spent on assignments (3 items; e.g. usually in a typical week spend doing assignment daily?) aspects. When students replied to the questionnaire, they were prompted to only consider assignments which were connected to the main subject in their academic major. The questionnaire was translated from English language to Thai language and Thai language to English language again by academic and language experts. In order to ensure reliability of the questionnaire, Cronbach's alpha of amount of assignments completed and time spent on assignments showed .72 and .69, respectively. Students answered questionnaires related to their last average grades with reference to academic achievement.

3.3 Data collection and analysis

The data are collected from five universities in Thailand. Student provided responses in their academic major class with pencil and paper and spent 5 to 10 minutes to complete the survey. For data analysis, we used a two-way analysis of variance (ANOVA) to compare the main effect of gender and year levels. This technique allowed us to assess potential interaction effects for gender and year. In order to assess potential models that could predict student academic achievement, we chose a hierarchical regression approach utilizing appropriate variables suggested by the initial ANOVA (e.g., should an interaction term be included in the models) along with assignment completion aspects to help us consider the strongest predictors of academic achievement.

4 Results

4.1 Relationship between HW Variables, Grade Level, Gender and Academic Achievement

Table 2 presents descriptive data (mean, standard deviations, skewness and kurtosis) and Pearson Correlations among all variables in this analysis. Normality violations were not a concern in our data. There was weak to moderate correlations in all variables (from 0.05 to 0.54), causing no concern over multi-collinearity (Kline 2005). Academic achievement positively related to gender ($r=.189$, $p<.001$), amount of assignments completed ($r=.345$, $p<.001$), time spent on assignments ($r=.131$, $p<.001$) and negatively related to year levels ($r=-.124$, $p<.001$). Time spent on assignments positively related to all variables: gender ($r=.201$, $p<.001$), year levels ($r=.100$, $p<.01$) and amount of assignments completed ($r=.189$, $p<.001$). Amount of assignments completed positively related to gender ($r=.172$, $p<.001$) but negatively related to year levels ($r=-.187$, $p<.001$).

Table 2: Descriptive data and Pearson Correlations among all variables in this study

Variables	1	2	3	4	5
1. Gender[a]	-				
2. Year levels[b]	-.022	-			
3. Amount of assignments completed	.172**	-.187**	-		
4. Time spent on assignments	.201**	.100*	.189**	-	
5. Academic achievement	.189**	-.124**	.345**	.131**	-
Mean	1.48	2.32	3.39	3.968	3.779
Standard deviation	.500	1.066	1.026	0.778	0.884
Skewness	.061	.164	-.647	-.590	-.072
Kurtosis	-2.001	-1.231	.233	-.157	-.843

Note: [a]Gender (1 = male, 2 = female). [b]Year levels (1 = freshman, 2= sophomore, 3= junior, 4= senior)
*p<.01, **p<.001

4.2 Effect of Grade Level and Gender on the HW Variables

In order to assess how gender and year levels could impact assignment completion aspects, we employed conducted two Two-Way (2x4) factorial ANOVA with assignment completion and time spent on assignments as the dependent variables, and gender and year levels as the independent variables. Table 3 shows descriptive data (mean and standard deviation) of gender and year levels on assignment completion aspects.

For assignment completion, the interaction between gender and year levels was not statistically significant ($F_{(3, 784)}$ =1.91, p=.126), but the main effect of gender and year levels were statistically significant ($F_{(1, 784)}$ =19.72, p<.001; $F_{(3, 784)}$ =14.47, p<.001 respectively) and represented a medium effect (R_{adj}^2=.08 Given these results, follow up procedures focused on the main effects. Female students completed significantly more assignments than the male students. In order to test year level difference, Tukey post hoc test showed that there were only significant differences between freshman and the other three year levels (sophomore, junior and senior). The results indicated that freshman complete more amount of assignments than the other three year levels.

In terms of time spent on assignments, no statistically significant differences were found in gender x year level interaction (F= $_{(3, 784)}$ =.78, p=.508). Nonetheless, the results of main effect showed that there were significant difference both between gender ($F_{(1, 784)}$ =32.81, p<.001) and year levels ($F_{(3, 784)}$ =3.21, p<.05). The effect size was medium (R_{adj}^2=.05). The female students spent more time than the male students. Moreover, considering year level difference, there were significant year level difference between freshman and junior, and freshman and senior. Specifically, the higher year level students spent more time on assignments.

Table 3: Descriptive data for year, gender and gender within year levels

	Amount of assignments completed		Time spent on assignments	
	Mean	Standard Deviation	Mean	Standard Deviation
Freshman				
• Males	4.04	.763	3.41	.921
• Females	4.46	.684	3.80	.816
• Total	4.37	.720	3.72	.852
Sophomore				
• Males	3.73	.858	3.67	.866
• Females	4.09	.668	3.90	.876

	Amount of assignments completed		Time spent on assignments	
	Mean	Standard Deviation	Mean	Standard Deviation
• Total	3.90	.792	3.78	.876
Junior				
• Males	3.73	.788	3.69	.920
• Females	3.87	.750	4.02	.759
• Total	3.80	.771	3.85	.860
Senior				
• Males	3.84	.76 9	3.70	.972
• Females	3.95	.711	4.10	.639
• Total	3.89	.742	3.88	.855
Total Samples				
• Males	3.84	.806	3.61	.920
• Females	4.27	.737	3.87	.808
• Total	4.11	.790	3.78	.860
Total	4.11	.790	3.78	.860

4.3 Prediction of Academic Achievement

Table 4 shows a hierarchical regression analysis using assignment completion aspects, gender and year levels to predict academic achievement. Assessment of diagnostics (e.g. discrepancy, leverage and influence case) and assumptions (e.g. multicollinearity, normality, homoskedasticity, and independence of the error) found no concerns. In the first model, we entered gender and year levels in prognosis on academic achievement. The results revealed that this model was statistically significant ($F_{(2,782)}$ = 20.96, $p<.001$) which accounted 5% of variance of the outcome variable. So, it represented a small effect. Gender significantly predicted academic achievement ($\beta=.186$, $p<.001$) and year levels was negatively predicted academic achievement ($\beta= -.120$, $p<.01$). In the second model, we added amount of assignments completed variable in this model to analyze main effect of this variable while controlling for gender and year levels. We found that this model explained 9% of variance change in the academic achievement which was statistically significant ($F_{(3,781)} = 40.85$, $p<.001$). It represented a small effect ($R^2= 13.6$). Amount of assignments completed was positively predicted academic achievement ($\beta=.310$, $p<.001$). Especially, students complete more number of assignment, they have higher academic achievement. Finally, time spent on assignments was added in the third model, accounting 0.3% of additional variance in the outcome ($F_{(4,780)} = 31.71$, $p<.001$). Therefore, time spent on assignments did not predict academic achievement ($\beta=.310$, $p=.101$). For comparison of three models, the second model is the best fit ($R_{change}^2=.09$, $p<.001$). Amount of assignments completed had the strongest impact on academic achievement.

Table 4. Results of explained variance (R2) and change (ΔR2), regression coefficients (β) and statistic and associated significance (t(p<)) in the prediction of academic achievement.

Predictor variables	Model 1		Model 2		Model 3	
	β	t(p<))	β	t(p<))	β	t(p<))
Gender	.188	5.382***	.140	4.142***	.129	3.769***
Year levels	-.122	-3.491***	-.068	-2.020*	-.078	-2.287*
Amount of assignment completed			.300	8.75`1***	.287	8.226***

Predictor variables	Model 1		Model 2		Model 3	
	β	t(p<))	β	t(p<))	β	t(p<))
Time spent on assignment					.070	1.958t
R2	.050		.136		.140	
R2change			.086		.004	

5 Discussion

Many researchers have claimed that assignment completion can improve students' academic achievement, not only in young students but also in adult students. In order to investigate the impact of assignments on academic success for college students, this study examined the effects of assignment completion (measured by the amount of assignments completed, and time spent on assignments) on academic achievement. Considering the significant individual difference noted by Bronfenbrenner (1989), we also assessed how gender and year levels could impact the assignment aspects and academic achievement. The data were collected from self-reports of undergraduate students in five universities of Thailand. We analyzed the data by using three steps: a Correlation analysis, Two-Way ANOVA and Hierarchical Regression.

Overall, we found that gender and year level differences impacted both number of assignments completed and time spent on assignments. The results are consistent with a prior research (Núñez et al. 2013), and specifically, the finding that female Thai students completed significantly more assignments than male Thai students mirrors previous research in other cultures. For example Xu (2010b), focusing on 685 African American students in grade 8 and 11, examined gender differences in homework completion. Xu's findings explained causes, supporting our results that female students were more apt to manage their homework about time, environment and distractions, control their emotions and maintain their motivation while doing homework. In addition, they explored activity engagement, finding that male students were more prone to come to class without homework than female students. However, Kitsantas and Zimmerman (2009) showed inversed findings for college students. Their results demonstrated no gender difference on frequency of homework completed.

Meanwhile, in comparing year level difference, our findings demonstrated that only freshman completed more assignments than sophomore, junior and senior. To interpret this new finding, we can use previous research from middle and high school settings (Núñez et al. 2013). Research from Spain that investigated students in middle to high schools described that higher students have lower interest and bad attitudes towards homework because they think that homework is not valuable for them (Ricardo et al., 2015a). For this reason, the college instructors might need to stress the usefulness of assignments to upper level undergraduate students. However, my result contrasted with Xu (2010b)'s findings in term of secondary school grade levels. His study showed that there was no grade level different on number of assignments completed. Causes of this result may come from content knowledge in universities that is likely to become harder and more complex (Planchard et al. 2015).

In term of time spent on assignments, both gender and year level differences were significant in spite of the small effect size. Similar to past studies, the discovery showed that the female students spent more time than the male students (Núñez et al. 2013). In contrast, Kitsantas and Zimmerman (2009) surveyed college students in quantity of homework (amount of time spent) and their result showed that there were no gender differences for time spent on assignment. They claimed that college students have the same responsibility toward academic tasks and many strategies of learning (e.g., note taking, writing, reading). In consideration of year level differences, the result that junior and senior students spent more time on assignments than sophomores is similar to other findings (Núñez et al. 2015c). These students would spend more time due to harder

content and more tasks (Núñez et al. 2015). Differently, compared with the result of Núñez et al. (2013), no gender differences were found.

According to our findings on academic achievement, gender and year level were statistically significant even though effect size was small. This result supports with individual difference theory stated in previous introduction. One interesting finding in this study was that the amount of assignments completed variable had the strongest impact on academic achievement. Amount of assignments completed positively predicted academic achievement. Especially, students who complete more assignments have higher academic achievement. It may be that the students who finish assignments get some knowledge and skills (Xu 2014). The result was accordant with past research. For example, Bembenuty and BaryJ.Zimerman (2003), studied college students in New York about assignment completion on academic performance and suggested that academic achievement leads students to be more task persistent. Furthermore, their research showed motivational beliefs and self-regulation processes play an important role for college students in completing assignments. Ramdass and Zimmerman (2011) have accounted that students use self-regulation skills to complete assignment by setting goal, planning strategies, paying attention, managing time and environment, and evaluating themselves. Moreover, this result is also in line with other studies (Núñez et al. 2014; Planchard et al. 2015; Valle et al. 2016). However, for consideration on time spent on assignments, this variable is not indicator for academic achievement. Instead, some researchers have suggested that taking more time does not promote the effective time management that leads to high academic achievement (Núñez et al. 2015). Moreover, Trautwein et al. (2009) noted that assignment engagement is more important than the amount of time spent for academic success, but he has agreed with benefits of doing assignment. On the other hand, some past studies revealed that amount of time spent on assignments influenced academic achievement (Kitsantas & Zimmerman 2009; Núñez et al. 2014).

Due to this non-experimental study using self-reports, levels of assessment in people are different, which can cause data errors. However, the next investigation should be an experiment to get more solid results. Various majors of education are another limitation of this research, as assigned homework could vary by department. Furthermore, this study is only the student view. So, the future researches should ask instructors to get their perspectives. Lastly, because of the small effect size, future research should investigate in another aspect, e.g., kinds of assignment, self-regulation skills, motivation for doing assignment.

This study raises some implications for education. First, there are differences between gender and undergraduate year levels in terms of assignment completion which may then affect students' learning outcomes. Hence, instructors should consider assigning tasks depending on personal differences (e.g., gender, year levels). For instance, instructors might need to stress both the importance and benefits of assignments to higher level students in order to enhance motivation for doing tasks. With respect to designing assignments, educators should set goals and expectations for students' assignments so that students would gain considerable advantage from this.

In conclusion, the key findings of the study showed positive associations between assignment completion and academic achievement for Thai college students. Therefore, assignments should be valued in higher education. Moreover, there was emphasis on gender and year level differences on assignment completions aspects and academic achievement. Individual difference also is a major concern to develop students' assignment abilities and learning outcomes.

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