Factors affecting assignment completion in higher education

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Abstract

Purpose – The purpose of this paper is to simultaneously investigate a variety of factors related to assignment completion (AC) (i.e. task orientation, cooperation, teacher feedback, time management and time spent on AC).
Design/methodology/approach – The study relied on a self-report survey to assess students' perceptions in relation to six variables. Participants included 1,106 undergraduate students from six public Thai universities. Analysis involved structural equation modeling.
Findings – This study provided new results related to task orientation as the strongest predictor of AC and time management. Cooperation and feedback improved AC with time management as an intervening variable. Time management and feedback did not predict time spent on AC.
Research limitations/implications – Future studies might explore the potential range of assignments that, for example, count for a higher portion of the grade versus those that are less or unimportant in terms of the course. Future studies might also look at the role of group assignments in relation to completion. Semi-structured interviews or observations might provide insights into how students manage their time and why task orientation has the most effect on AC. Future research might investigate more specifically at what point time management does or does not affect completion. In general, given the growth of online learning and contexts in which students may be increasingly called on to complete assignments independently, factors such as those investigated in this study will require more attention in varying countries and contexts, generically and for individual subjects.
Practical implications – Instructional designers and instructors can promote task orientation through reliance on strategic scaffolding. For designing a task-oriented environment, instructors need to offer challenging assignments. Instructors should also assign work that encourages motivation, effort and achievement. To ensure that cooperative learning positively affects time management, instructors and designers can allot specific in-class time for completion of tasks, reliance on flipped classroom activities and student conversations regarding time restrictions and time-management skills. Instructors can be supported to help them provide appropriate types of feedback, as well as ideas for implementing the feedback in practice.
Originality/value – Little research has been conducted on AC in higher education. Those studies that have been conducted have focused on the elementary and secondary levels. Furthermore, studies have not always taken into account the complex relationships between different factors that can potentially influence AC.

Keywords Cooperation, Time management, Assignment completion, Instructor feedback, Task orientation
Paper type Research paper

Introduction

For higher education students, assignment completion (AC) plays an important role in learning and can positively impact retention, achievement, test performance as well as opportunities to learn from mistakes (Grodner and Rupp, 2013). Planchard *et al.* (2015) found that AC positively impacted academic performance. Similarly, Bembenuty and Zimerman (2003) identified a

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positive relationship between AC and academic achievement/performance. At the secondary and elementary levels where much of the research has been conducted (see Bas *et al.*, 2017), the results have revealed that assignments (often referred to as homework) represent an effective strategy for boosting achievement (Murillo and Martinez-Garrido, 2014; Núñez *et al.*, 2015a) and for assessing students' learning outcomes (Tuamsuk, 2013) and their knowledge, skills, abilities and attitudes (Wilder and Ferris, 2017). Cheema and Sheridan (2015) identified a positive relationship between achievement in mathematics and time spent on homework.

Assignments may be defined as "any academic, course-related task assigned by the instructor intended for students to carry out during non-class hours" (Planchard *et al.*,2015, p. 11). In this study, assignments refer to any out-of-class activities or tasks that are instructor-assigned, and that may be for summative or formative assessment purposes. The importance of assignments as out-of-class work becomes more evident with the growth in online courses in which students are often required to complete "outside-of-class," independent assignments. As Collis *et al.* (2001) observed, in many cases, instead of courses relying on lectures and examinations, they are "moving to a model of six or seven assignments or subparts of a larger overall project, each submitted via a web-based course-management system and each worth a certain portion of the overall course grade" (p. 306).

In spite of the relevance of assignments and their growing prevalence particularly with online learning, there can be significant challenges to their completion. Xu (2017) argued regarding "homework" with high-school students that it demands a high motivational capacity because it occurs after class and, often, in competition with more entertaining activities such as social networking or playing video games. Xu (2015) also found that distractions such as television and new media can compete with out-of-class academic activities. Likewise, Xu and Wu (2013) identified the challenges of lack of structure and time constraints as factors that can make it more difficult for students to complete work outside of class. Similar results were found at the post-secondary level. Gregory and Morón-García (2009) investigated workload, time management and the length of time allowed to complete online assignments. Their results revealed that students were stressed by coinciding deadlines, but perceived that they were better able to manage deadlines with experience. Similarly, Cook (2018) identified challenges to learning assignments (through online homework systems) in undergraduate biology courses. Cook referred to competing priorities between students' need to complete assigned work versus "outside demands for students' time, such as work responsibilities or athletic practices and games" (p. 12).

The growth in reliance on assignments for assessment purposes in online contexts combined with challenges to AC both in online and face-to-face contexts provided the motivation for the study reported on in this paper. While the relevance of investigating out-of-class work has been recognized by researchers at the elementary and secondary levels, such is not the case at the post-secondary level. In fact, there is a comparatively much smaller body of literature related to AC in higher education than the large amount on "homework" in elementary and secondary school. For an overview of literature at those levels, see Bas *et al.* (2017). In addition, the small number of studies on AC in higher education have been primarily limited to the USA Investigating other contexts, such as those in Asia, provide the opportunity to view the phenomenon from a broader perspective. Given the increasing numbers of Asian students choosing to study in North American and European universities, it is relevant to gain insight into factors that influence their assignment completion.

More importantly, while there have been investigations of independent factors that might influence AC, there have not been attempts to consider the multiple factors that might influence AC. Nor have there been attempts to identify if relationships exist between different factors. An example of one factor that has been investigated is students' time management. Time management involves students planning, monitoring and regulating their schedules (Pintrich, 2004). Poor time-management skills can result in low "homework" completion for

undergraduate students (Li *et al.*, 2018). In relation to total time spent on AC, Trautwein *et al.* (2009) found that time spent on AC negatively impacted academic achievement. In relation to AC, time has been studied in conjunction with other factors such as feedback. Steiner (2016) found that instructors can help students to better manage their time by giving feedback. Tas *et al.* (2016) found that the more students get feedback, the higher their achievement. In general, feedback can guide students in learning (Brown *et al.*, 2016) and decrease the gap between current performance and goals (Hattie and Timperley, 2007).

Task orientation is another factor related to AC and involves students' engagement and persistence on tasks (Valle *et al.*, 2009), including AC. Being task oriented can help students to estimate their competence and willingness to invest effort in completing the task (Seegers *et al.*, 2002). Research with undergraduate students has revealed that students with higher levels of motivational orientation (including task orientation) were more likely to manage time (Valle *et al.*, 2009). Another factor that has been studied is cooperative types of learning, e.g. team-based. Cooperation refers to the "extent to which students cooperate rather than compete with one another on learning tasks" (Aldridge *et al.*, 2010, p. 50) and includes team-based learning. Team-based learning can help students to better manage time to complete assignments (Watkins *et al.*, 2018). AC can potentially be supported in cooperative learning environments in which students discuss their ideas, help each other and complete assignments (Johnson and Johnson, 2014).

Task orientation, time management, cooperation and feedback are important factors in AC. They have been studied individually and, in some cases, in relation to one other factor (e.g. time management and task orientation). However, they have not always been studied in relation to time spent on AC and the amount (some, none, a lot, etc.) of assignments completed. This study simultaneously investigates all four factors in relation to each other and to time spent on AC as well as the amount of assignments completed.

The specific research questions were as follows:

(1) What, if any, are the relationships between time management, task orientation, cooperation, instructor feedback, amount of assignments completed and time spent on assignments?

(2) What, if any, are the effects of time management, task orientation, cooperation and instructor feedback on the amount of assignments completed and time spent on assignments?

Literature review

The limited number of studies in higher education investigating AC relate to academic achievement (Kitsantas and Zimmerman, 2009), students' aptitudes (Kontur *et al.*, 2015), motivational beliefs and self-regulatory processes (Bembenuty and Zimerman, 2003) and time spent on assignments (Cook, 2018; Trout, 2018). Studies have been conducted in specific subject areas such as mathematics (e.g. Bembenuty and Zimerman, 2003) and genetics (e.g. Planchard *et al.*, 2015). Table I summarizes studies focusing on AC in higher education. All studies were conducted in the USA, except for the present study that was conducted in Thailand. The table highlights the contribution of this study in terms of number of factors investigated, location of study (outside the USA) and large sample size compared to previous studies.

Cook (2018) aimed to identify correlations between learning assignments and final course grades in online homework systems in undergraduate biology courses. Cook's results showed that the more time students spent on "homework" the lower their course grade. However,

Study	Participants (N)	Subject	Data collection/ analysis	TO	CO	IF	TM	TS	AC
Cook (2018)	311	Biology	Instructor's report (MR)					✓	
Li *et al.* (2018)	30	Engineering	Semi-structured interviews				✓		✓
Trout (2018)	78	Business	Survey (SWT, *t*-test, MWT)					✓	
Kontur *et al.* (2015)	20	Electricity and magnetism	Experiment (correlation)						✓
Planchard *et al.* (2015)	31	Genetics	Open-ended questionnaire, reports, exams (correlation, *t*-test)				✓		✓
Grodner and Rupp (2013)	423	Economics	Experiment (OLS)						✓
Kitsantas and Zimmerman (2009)	223	Educational psychology	Survey (path analysis)					✓	✓
The present study	1,106	Academic major	Survey (path analysis)	✓	✓	✓	✓	✓	✓

Note(s): OLS = Ordinary least squares regression, MR = Multiple regression, SWT = Shapiro–Wilks test, MWT = Mann–Whitney *U* test

Table I.
Studies related to AC in higher education (2009–2019)

those who spent little time on "homework' experienced low grades, whereas those in the middle (closer to the mean of 577 min) were more likely to receive a mean grade. Those who spent above 1,000 min on AC were below the mean course grade. Li *et al.* (2018) studied students' motivation in relation to "low completion of homework" (<80 percent) in engineering courses. They summarized results in relation to the attribution theory and offered corresponding interventions. Li *et al.* found that internal rather than external reasons explained students not completing "homework" with poor time-management skills being a factor. Other factors included illness and adjustment problems. The authors proposed seminars and tutoring as intervention techniques.

Trout (2018) investigated the relationships between class duration, student performance, instructor evaluations and time spent by students on "online homework." Trout found a non-statistical difference between time spent on online homework for classes once versus twice per week. The results were higher for the one-day-a-week class. Kontur *et al.*'s (2015) results are somewhat similar to those of Cook (2018). Kontur *et al.* found that students of low and medium aptitude who did more "homework" sometimes scored lower on exams than their peers who did less. Their findings were limited to "homework" related to "book problems" in a physics' course. Planchard *et al.* (2015) explored relationships between motivation, homework completion and academic achievement. The authors found "no significance in homework completion when considering credit or extra credit as a motivating factor;" however, there was a significant difference in completion "when considering reinforcement of content as a motivating factor" (p. 11). The authors concluded that they identified a "positive relationship between homework completion and academic achievement" (p. 11).

Grodner and Rupp's (2013) study is different from this study in its narrower focus on examining "the effect of homework assignments on student learning outcomes" (p. 106). The authors concluded that requiring students to complete "homework" with externally imposed deadlines could help them avoid procrastination. Kitsantas and Zimmerman (2009)

investigated the influence of homework experiences on students' grades. The authors considered factors such as self-efficacy, quality of homework and perceived responsibility in their analyses. They did not explore the phenomenon of AC (or homework completion). They found that homework quality was related to study habits. This study differs from those reported in this literature review. It is more specifically focused on assignment completion and its multiple related factors. It was also conducted outside of the USA and with a larger sample. Rather than being limited to one subject area, this study focused on multiple subjects, i.e. students' academic major.

Methods

Participants

The study relied on convenience sampling (Alvi, 2016) with students from Bangkok and surrounding areas. The population consisted of 109,605 students from six universities with 43,086 males (39 percent) and 66,519 females (61 percent). The sample for this study included 405 males (37 percent) and 701 (63 percent), females (total 1,106) first- to fourth-year students from six public universities in urban Thailand. They were studying in different academic areas as follows: computers (28 percent), engineering (29 percent), commerce/accounting (19 percent), foreign language (12 percent), social studies (10 percent) and science (2 percent).

Procedures

The principal investigator (PI) received permission from the university, relevant instructors and participants to conduct the study according to the ethics' requirements of the university at which she was enrolled as a PhD candidate. The PI visited each university and class in person to distribute and oversee the completion of the survey. Participants were informed that their participation was voluntary, and not part of any course or university requirement. They were also informed that their responses would be studied and reported in aggregate format to ensure anonymity and confidentiality. All students in each class were given a copy of the survey, but could choose not to complete it. Completion of the survey indicated consent. Completion time ranged from 15 to 20 min.

Measures

The study's self-report survey was designed to assess students' perceptions in relation to six latent variables: task orientation, cooperation, instructor feedback, time management, amount of assignments completed and time spent on assignments. The survey was piloted with a subpopulation ($n = 300$) (see Hair *et al.*, 2010). It consisted of 27 items, as shown in Table II.

Participants could respond using a Likert-type scale. For task orientation, cooperation and time management, the scale was almost never (1), seldom (2), sometimes (3), often (4) and almost always (5). The scale for items of instructor feedback and amount of assignments completed was none (1), some (2), about half (3), most (4) and all (5). In terms of time spent on

Factors	No. of items	Adapted from	Cronbach's α
Task orientation	7	Aldridge *et al.* (2010)	0.82
Cooperation/teamwork	8	Aldridge *et al.* (2010)	0.87
Instructor feedback	3	Xu (2011)	0.70
Time management	4	Xu (2008)	0.83
Time spent	3	Xu (2011)	0.72
Amount completed	2	Xu (2011)	0.70

Table II. Summary of survey items

assignments, students could reply as follows: 1 = less than 30 min, 2 = between 30 min and 1 h, 3 = between 1 h and 1.30 h, 4 = between 1.30 h and 2 h and 5 = more than 2 h. Table III summarizes the scale and presents sample items of all factors. The survey can be viewed in Appendix A.

Data analysis

Normality violation and missing data did not appear in the analysis. Measures of construct validity first involved exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA). Analysis using the EFA statistics relied on the oblique rotation method because the correlation among factors was higher than 0.32 (Tabachnick *et al.*, 2007). The outcome resulted in six different factors, including task orientation, cooperation, instructor feedback, time management, time spent on assignments and amount of assignments completed. The model accounted for 60.42 percent of the total cumulative variance. All items in each factor showed loaded values over 0.5 and the eigenvalue above 1 (see Hair *et al.*, 2010). The Cronbach α values of each factor were higher than 0.70, representing high confidence for the constructs (Iacobucci and Duhachek, 2003).

CFA statistics showed that composite reliability (CR) of all factors was between 0.66 and 0.87. Convergent validity (average variance extracted – AVE) of all factors was between 0.35 and 0.50. Thus, the CR scores of all factors were higher than the AVE scores. This analysis revealed acceptable convergent validity (Hair *et al.*, 2010). Regarding divergent validity, analysis demonstrated that both the maximum shared variance (MSV) and average shared variance (ASV) scores of every variable were lower than the AVE scores. This analysis revealed that there was good discriminant validity or that different constructs were unrelated (Hair *et al.*, 2010) CR, AVE, MSV and ASV values of all latent factors were shown in (Table IV).

Analysis relied on structural equation modeling (SEM). This approach allowed assessment of both direct, indirect path coefficients and intervening factors between instructor feedback, cooperation, task orientation, time management and two constructs of AC (amount of assignments completed and time spent on assignments). To assess model fit, Hair *et al.* (2010) described the attributes of different fit indexes in various model cases. In the case of observed variables between 12 and 30 variables and the samples above 250 respondents, the basis of the good model fit consists of chi-square ($\chi 2$), which can show the significant p-value expected, comparative fit index(CFI) or Tucker–Lewis index (TLI) point higher than 0.92, standardized root mean squared residual (SRMR) point of lower than 0.08 with CFI point exceeding 0.92. Finally, Hair *et al.* also suggested a root mean square error of approximation (RMSEA) point of less than 0.07 with CFI over 0.92.

Table III. Summary of survey items in this study

	Factors	Scale definitions 5 (4 3 2) 1	Sample item (in the main subject in my major)
1	Task orientation	Almost ↔ almost always never	I know what I am trying to accomplish in this class
2	Cooperation		I work with my friends when I have an assignment
3	Time management		I prioritize my work and plan in advance
4	Instructor feedback	All ↔ none	My instructor checks this much of my assignment. . .
5	Amount completed		Usually, I complete this amount of assigned assignments. . .
6	Time spent	2 h ↔ < 30 min	I usually spend this amount of time on assignments daily. . .

Results

Descriptive data (mean, standard deviations, skewness and kurtosis) and Pearson correlations among all latent factors are listed in Table V. Skewness and kurtosis presented normal distribution of data. Analysis of the correlations showed weak to moderate relationships among all factors (from 0.08 to 0.43), leading to non-over multicollinearity (Hair *et al.*, 2010). All factors had positive correlations with other factors. The amount of assignments completed had the highest significance associated with time management ($r = 0.29$, $p < 0.01$). This correlation shared 8.35 percent of the variances, representing a medium effect. However, the lowest correlation was for time spent on assignments and instructor feedback factors ($r = 0.08$, $p < 0.01$), representing a small effect (0.64 percent of variances).

For *RQ2*, analysis involved path analysis with task orientation, cooperation and instructor feedback as the independent variables, and time management, amount of assignments completed and time spent on assignments as the dependent variables. Figure 1 shows parameter estimates (standardized path coefficient, β) of the model. The good model fit was $X^2(295,1,106) = 499.82$, $X^2/df = 1.69$, $p < 0.001$, RMSEA = 0.03, GMI = 0.96, CFI = 0.97, SRMR = 0.02. Table VI shows direct, indirect and total effects in the final model.

There was a positive association between instructor feedback, cooperation, task orientation and time management. The students who self-reported higher task orientation ($\beta = 0.42$, $p < 0.001$), cooperation ($\beta = 0.12$, $p < 0.05$) and instructor feedback ($\beta = 0.22$, $p < 0.001$) perceived themselves as having better time-management skills. The results revealed that task orientation was the strongest predictor of time management. About 38 percent of the variance in time management was predicted by instructor feedback, cooperation and task orientation.

Task orientation had a direct effect on the amount of assignments completed ($\beta = 0.21$, $p < 0.01$) and time spent on assignments ($\beta = 0.23$, $p < 0.01$). Cooperation was only directly associated with time spent on assignments ($\beta = 0.12$, $p < 0.05$). However, cooperation and

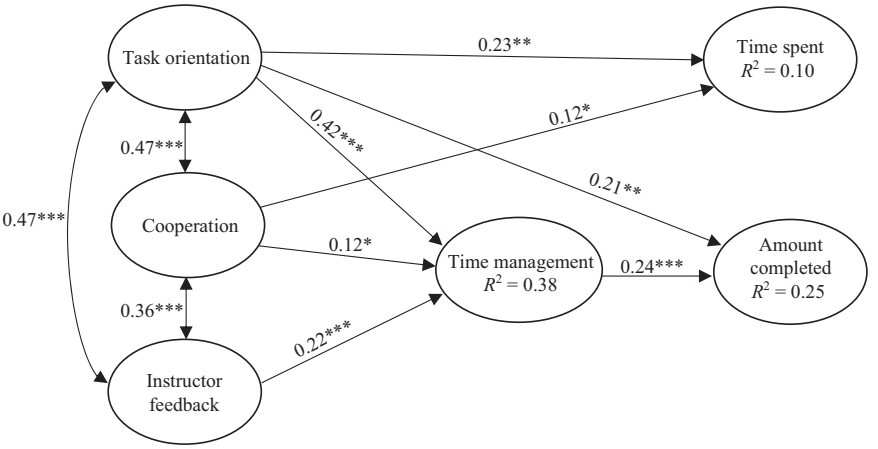
Construct	CR	AVE	MSV	ASV
Task orientation	0.74	0.35	0.34	0.22
Cooperation	0.87	0.49	0.27	0.14
Instructor feedback	0.68	0.48	0.18	0.11
Time management	0.76	0.45	0.34	0.19
Time spent	0.67	0.40	0.11	0.07
Amount completed	0.66	0.50	0.19	0.12

Table IV.
CR, AVE, MSV and ASV values of all latent factors

Factors	TO	CO	IF	TM	TS	A
1. Task orientation (TO)						
2. Cooperation (CO)	0.43**					
3. Instructor feedback (IF)	0.31**	0.28**				
4. Time management (TM)	0.42**	0.35**	0.31**			
5. Time spent (TS)	0.23**	0.21**	0.08**	0.17**		
6. Amount completed (A)	0.28**	0.19**	0.20**	0.29**	0.17**	
Mean	4.04	4.11	4.03	3.96	3.78	4.11
Standard deviation	0.48	0.54	0.64	0.59	0.86	0.79
Skewness	−0.32	−0.52	−0.60	−0.40	−0.54	−0.87
Kurtosis	0.20	0.53	0.42	0.28	−0.21	0.60

Note(s): **$p < 0.01$

Table V.
Descriptive data and Pearson correlations among all factors



Note(s): * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$,

Figure 1.
Standardized coefficients of task orientation, cooperation and instructor feedback on time management, time spent and amount completed

Effect	Standardized coefficient (β) Direct	Indirect	Total
Time management			
(1) TO	0.42***		0.42***
(2) CO	0.12*		0.12*
(3) IF	0.22***		0.22***
Time spent			
(1) TO	0.23**		0.23**
(2) CO	0.12*		0.12*
Amount completed			
(1) TO	0.21**	0.12**	0.33**
(2) CO		0.04*	0.04*
(3) IF		0.05*	0.05*
(4) TM	0.24***		0.24***

Note(s): *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table VI.
Direct, indirect and total effects in the model

instructor feedback indirectly affected the amount of assignments completed. Accordingly, time management was an intervening variable between cooperation, instructor feedback and the amount of assignments completed. The analysis also showed that the strongest predictor of task orientation was the amount of assignments completed and time spent on assignments.

Analysis by SEM confirmed that time management was positively associated with the amount of assignments completed ($\beta = 0.24$, $p < 0.001$). There was not a significant association between time management and time spent on assignments. The model revealed a small and medium effect size of time spent on assignments and the amount of assignments completed, explaining 10 and 25 percent of variance, respectively.

Discussion

Task orientation was the strongest predictor of time management. This result may be partially explained by Valle *et al.*'s (2009) study of motivational orientation (which includes

task orientation). Valle *et al.* found that students with a higher motivational orientation placed more value on academic tasks and, therefore, persisted more, were able to self-regulate and manage time better. Assignments, as work completed outside of class, require students to work independently. The requirement for task orientation and time management skills is likely to be even greater in contexts where students are completing assignments in independent study contexts such as those characteristic of online learning. Aldridge *et al.* (2010) characterized task orientation in terms of students giving importance to getting work done, knowing goals and what they want to accomplish, paying attention and knowing how much work they need to complete.

Cooperative learning positively affected time management suggesting that, when students work together, they can better manage their time. This result should, however, be interpreted with some caution. Regarding team-based learning with undergraduates, Watkins *et al.* (2018) found that time pressures and the difficulty of managing schedules made it more difficult for students to complete their projects. Similarly, results of Xu's (2010) study with secondary-school students suggested that students in cooperative-learning situations may be less effective at managing time for assignments because they may be more interested in social activities. Watkins *et al.* (2018) also identified obstacles to teamwork that can affect time management. These include the need to manage and synchronize multiple and conflicting schedules.

The results also showed that instructor feedback had a positive effect on time management. This result is consistent with that of Núñez *et al.'s* (2015b) study with elementary- and secondary-school students. Núñez *et al.* found that when students received feedback, they allocated their time and schedule to correct and complete their homework. Xu (2010) argued that teachers play a key role in helping secondary students improve "homework" time management. In line with Xu (2010), Tas *et al.* (2016) found that giving students feedback on "homework" supported time management. However, Valle *et al.* (2015) found that teacher feedback indirectly affected time management.

Task orientation directly affected the amount of assignments completed and time spent on assignments. This result may be explained by what Seegers *et al.* (2002) described as a positive relationship between task orientation, students' competence for the task and their willingness to invest effort. In this study, cooperation indirectly affected the amount of assignments completed with time management as an intervening factor. This result has been corroborated in other contexts. Watkins *et al.* (2018) noted that students in team-based learning needed time-management skills to finish assignments. Felder and Brent (2007) found that students who worked alone were likely to delay or procrastinate completing assignments, but when they worked together, they were more likely to do their assignments on time. Regarding feedback, the present study revealed that instructor feedback indirectly affected the amount of assignments completed. Núñez *et al.* (2015b) found a direct effect of teacher feedback on amount of homework completed. Xu (2011) found a positive relationship between teacher feedback and amount of homework completed. In terms of time spent on homework, the present findings are consistent with Núñez *et al.* (2015b), in that no association was found between teacher feedback and time spent on homework. Studies at the elementary- and secondary-school level (e.g. Xu, 2011) have examined the effect of instructor feedback on completion rates, but this study focused on students in higher education.

Time management was significantly associated with the amount of assignments completed. This result is consistent with prior research at the secondary level. Xu and Wu (2013) found that assignment management, including time management, was associated with "homework completion" in mathematics at the secondary-school level. The better students' time-management skills, the greater the amount of homework completed (Núñez *et al.*, 2015a). Wolters *et al.* (2017) found that students who used strategies (including time management)

were less likely to procrastinate and more likely to finish their tasks before deadlines. This finding suggests that time management is important. It encourages students to not only set goals and priorities but also to monitor the use of time for academic tasks. Planchard *et al.* (2015) found that time commitment affected assignment completion for undergraduate students. They concluded that undergraduate students need to manage time for complex tasks, or they may give up if the work requires too much time. This study found that there was no association between time management and time spent on assignments. The finding is in line with Núñez *et al.* (2015a) at the secondary level. They concluded that spending more time on homework may not necessarily affect time-management strategies. Valle *et al.* (2015), at the elementary level, found that good time management is not necessarily related to the amount of time spent doing homework. However, the results with secondary students revealed that time management did affect time spent on homework (Xu *et al.*, 2014).

Conclusions, limitations and implications

The results of this study should be interpreted in relation to its limitations. The study was conducted in Thailand. Readers in other contexts should evaluate the relevance of their results for their particular context. Assignments can vary widely from one instructional context to another. In addition, there may be cultural differences related to the amount of assignments given and how much time students have to complete them. The survey relied on self-report measures, which may not correlate with actual behaviors. Podsakoff *et al.* (2003) noted that individuals may wish to appear consistent and rational in their response or aim to seek social acceptance by giving certain responses. There are other possible factors that might affect AC such as self-efficacy and help-seeking (Bembenutty and White, 2013). It was beyond the scope of this study to investigate these factors. Similarly, the methods were quantitative only. Interviews, observations and focus groups may provide further insights into assignment completion.

Depending on the context, the status of its assignments may vary widely. For example, some courses may prescribe a major assignment representing a high proportion of the summative assessment. This study focused on academic majors. It was beyond the scope of the study to conduct analyses to identify differences between subject areas within these academic majors. The sample was comprised primarily of three subject areas (computer, engineering, finance). Assignments in these subject areas may take on a different form than those in, for example, foreign languages. Assignments in the former may take place in group laboratory contexts that are out-of-class yet in an institutional context nonetheless. It was beyond the scope of this study to investigate the relationship of learning design to assignment completion. Yet, in Table V, the mean and SD suggest that there may be value in going beyond the raw data to identify relationships. For example, the IF mean is 4.03 (presumably indicating "My instructor checks nearly all of my assignments"). Could this indicate that the typical exercise is easy to mark (such as simple short answer in contrast to essay writing)? This is the type of question that could be explored in future studies. In general, as is the case with survey data, the results show associations as opposed to cause-and-effect relationships. Implications for practice should be considered with this limitation in mind. The implications are presented here as opportunities rather than prescriptions. Instructional designers and instructors can promote task orientation by ensuring clear articulation of what has to be accomplished and through reliance on strategic scaffolding. McLoughlin (2002) described approaches to scaffolding that include task support for students whereby structures (heuristics or resources) are provided to help them engage in tasks and activities. For designing a task-oriented environment, instructors need to offer challenging assignments (Dettmers *et al.*, 2010). Instructors should also assign assignments depending on students' interests to encourage motivation, effort and achievement (Dettmers

et al., 2010). Regarding cooperative learning, to ensure that it positively affects time management, instructors and designers can implement some of the suggestions of Watkins *et al.* (2018). These include allotting specific in-class time for completion of tasks and reliance on flipped classroom activities. Regarding feedback, Collis *et al.* (2001) argued that feedback is key for Web-based assignments. They noted that such feedback can be provided within the course website using "model answers" provided by the computer that save instructors' time. Reliance on peer feedback was another approach recommended by Collis *et al.* Collis *et al.* also recommended that instructors be supported to help them with the "types and purposes of feedback, as well as ideas for implementing the feedback in practice" (p. 308).

This study focused on AC in a face-to-face context. However, researchers might attempt to replicate these findings with online learners. Future studies might explore the potential range of assignments that, for example, count for a higher portion of the grade versus those that are less or unimportant in terms of the course. Future studies might also look at the role of group assignments in relation to completion. As Johnston and Miles (2004) reported, group work is common in higher-education classes. In relation to time management and task orientation, semi-structured interviews or observations might provide insights into how students manage their time and why task orientation has the most effect on AC. This study revealed that time management did not predict time spent on assignments. Research might, therefore, investigate more specifically at what point time management does or does not affect completion. Given the growth of online learning in which students may be increasingly called on to complete assignments independently, factors such as those investigated in this study will require more attention. The success of these new and emerging forms of learning may depend on how well students can be supported in AC.

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Appendix A. The survey

Regarding my subject major...	Almost always	Often	Some times	Seldom	Almost never
1. I complete what is expected for assignments					
2. It is important to complete assignments					
3. I try to understand the assignments in this class					
4. I know how many assignments I have to do					
5. I know the goals of assignments					
6. I know what I am trying to accomplish in assignments					
7. I pay attention to what has to be done in assignments					
8. I work with friends when I have an assignment					
9. I share materials and resources with other students when doing assignments					
10. I get involved in teamwork for assignments					
11. I work with other students on assignments					
12. I learn from other students when I work with them on assignments					
13. I consult other students when I have questions about assignments					
14. I work with students when I have problems with assignments					
15. Other students work with me to complete assignments					

In my subject major...	None	Some	About half	Most	All
16. My instructors checks this amount of my assignment:					
17. My instructor grades this amount of my assignment:					
18. This much of my assignments counts toward my overall grade:					
19. I usually complete this amount of assignments:					

In my subject area...	Routinely	Often	Sometimes	Rarely	Never
20. I prioritize my assignments and plan in advance					
21. I follow up my unfinished assignments					
22. I remind myself of the remaining time to complete assignments					
23. I tell myself to do assignments more quickly when I have missed the deadline					
24. I come to class without assignments					

I spend this amount of time on assignments	More than 2 h	1.5–2 h	1–1.5 h	30–60 min	Less than 30 min
Usually					
in a typical week					
on a typical weekend					