Academic time diaries: Measuring what Australian academics actually do

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ABSTRACT

Academics and universities have an interest in tracking the tasks and workloads of academics in the areas of teaching, research and administration, but do academics and their employers know how many hours a week an academic engages in particular tasks? We discuss the on-going development of an electronic time diary tool to measure an academic’s teaching, research and administrative tasks. Our preliminary findings suggest that time spent communicating with students is now a significant portion of an academic workday. Academics work long hours interrupted by the demands of students as customers coupled with increasing accountability and compliance within universities. We find that academics value aspects of their work which foster self-direction and creativity in both teaching and research activities.

Keywords: academics and time management; higher education management; impact of new technology on academics; change management; workplace efficiency and effectiveness; time diaries
The introduction of learning technologies such as subject websites, forums and emails has resulted in changes in the tasks expected of academics in running their subjects. Changes in the student cohorts entering universities have meant a change in teaching practices as the new generation of students have higher expectations of communication with academics including face-to-face conversation, phone calls, emails and posts on subject forums. University student profiles are changing because:

- current students are less likely to be pursuing their studies uninterrupted by paid work obligations;
- current students expect more frequent feedback (Meister and Willyerd 2010); and
- changes to admissions standards means that universities are admitting students with varied levels of preparation for university and arguably without adequate remediation interventions in place (Anderson et al. 2002).

These fundamental workplace changes give rise to several questions that universities and academics have strong interests in answering. What tasks are academics doing to run their subjects? How long are academics spending on those tasks to run their subjects? The answers given by past generations of academics may have little relevance in today's universities.

Our aim is to develop and pilot a time diary tool for measuring academics' activities and use of time across teaching, research and administration. This tool has been designed to assist academics in their own time management, help academic leaders manage their academic staff and enable universities as institutions to better leverage their resources to achieve quality outcomes in teaching and research. The primary resource available to academics is their own time. Despite this need, academics are provided with few tools with which to monitor and manage their time (Marginson & Considine 2000; Anderson et al. 2002). We produce a diary tool to measure how academics are allocating their time, and also provide an opportunity for those academics in the study to measure their own use of time and to reflect on their own decisions as professionals about teaching and time management. This process may facilitate academics' reflective practice.
LITERATURE REVIEW

Previous researchers have given some emphasis to the impacts of new technologies on academics’ activities and time (Marginson & Considine 2000; Anderson et al. 2002; Hull 2006; Blackmore & Sachs 2007). While the educational possibilities of informational and communication technologies for online learning, collaborative teaching and other new forms of teaching are enormous, one of the downsides of these new technologies is the way that new technologies impacts academic workloads. As Tennant et al. (2010) argued in their book on teaching and learning in higher education, dealing responsibly with students’ emails takes a large amount of time, much more than student contact in the so-called “pre-electronic” era. Accurately measuring the tasks and time required for teaching a subject can assist universities in evaluating their teaching practices and also in juggling other academic tasks such as scholarship and research. Equally, an opportunity for academics to reflect on their own use of time will support academics in evaluating their own teaching practices and professional activities.

The preparation of computer-enabled learning takes more time for academics due to the increased need for individual learning and training to master these techniques (Anderson et al. 2002; Hill 2006). Time spent dealing with student emails has also increased greatly with the proliferation of means of electronic communication. Yet this is invisible work (Anderson et al. 2002; Soliman 1999) which is very difficult to capture in existing academic workload documents. Eighty-four percent of respondents in the Anderson et al (2002) survey of academics at Australian universities agreed that time spent on email communication was increasing. There is also an expectation by students that academics can answer their enquiries 24/7, which is part of the overall trend of commodification of the higher education industry with students portrayed as ‘customers’ (Slaughter & Leslie 1997; Marginson & Considine 2000) leading to the syndrome of the ‘24 hour professor’ (Chronicle of Higher Education, May 31, 2002, cited in Anderson et al. 2002).

Tennant et al. (2010, p. 135) argue that academics now struggle with controlling the impact technology is having upon the work day and upon personal time and that “technology has made
academics hyper-accessible. Many academics feel they now have to be hyper-responsible.” Changes at Charles Sturt University have mirrored changes at other institutions that have led to work intensification for academics (Dearlove 1998; Jarvis 2001; Ogbonna & Harris 2004; Blackmore & Sachs 2007; Jensen & Morgan 2009). These changes include increasing technological duress (mandatory imposition of a range of new technologies), devolution of administrative tasks to academics, uncoordinated escalation of bureaucratic processes due to increased external monitoring from government funding bodies, new strategic alliances and partnerships with commercial organisations requiring more entrepreneurial activity by academics and the impact of increased casualisation in the higher education sector some of which are well documented (Anderson et al 2002; Marginson & Considine 2000).

At the University of Western Sydney changes in work practice have resulted in an increasing load for academics but have not been reflected in a change in workload formulas (Jensen & Morgan 2009). Recent industrial problems at the Faculty of Nursing, Midwifery and Health at the University of Technology, Sydney and Macquarie University suggest these problems are increasing. Changing academic work practices across the sector may produce high levels of job dissatisfaction, alienation and disengagement for academics (Anderson et al. 2002; Coaldrake & Stedman 1998; Ogbonna & Harris 2004).

In many surveys of academic staff in the United States, United Kingdom, Australia and New Zealand there was an overwhelming picture of work intensification, higher stress levels and growing disillusionment with the changing content of academic work which seems part of a global trend (OECD 1998). Some commentators also discuss the seeming mismatch between the aspirations of academics and the managerial expectations of the universities (Marginson & Considine 2000).

There is very little research on work intensification that actually measures this in a quantitative way. Most existing research is in survey form which gives an interesting account of respondent’s perceptions, attitudes and experiences but very little evidence in terms of a detailed time-breakdown of these tasks. Many survey results discuss an increase in numbers of hours worked (Anderson et al.
2002; Coaldrake & Stedman 2000; Jensen & Morgan 2009; Vardi 2009) but the individual tasks are not analysed in detail. Correspondingly, time management for academic leaders and heads of schools is mentioned as important but it is not really quantified or treated in any depth (Ramsden 1998). One of the problems is how difficult it is to measure the inter-relationships and interdependencies of these learning and teaching tasks and their overlaps. Another problem is the subjectivities in terms of academics’ responses to this allocation of work and their subsequent activities. These activities are valued according to personal preferences (Wolf 2010) and as such are difficult to evaluate as they also entail other complex questions such as staffing levels and administrative processes (Vardi 2009).

As early as 1999, a survey by McInnis concluded that “we are perhaps at a critical point for the academic profession where the amount of hours worked, and the diffusion and fragmentation of tasks seriously threatens the quality of both research and teaching” (McInnis 1999, p. 63, cited in Anderson et al. 2002). Perhaps this is even more critical with ever increasing demands for accountability and devolution of academic workload from centres/senior executive, placing academics increasingly in the position of harried middle-managers trapped between the demands of management and the students they teach.

**METHODOLOGY**

The project used a time diary approach, which is also referred to as a ‘micro behaviour’ approach to survey research (Robinson & Bostrom 1994), for collecting self-reports of an individual’s daily behaviour (Robinson 1999). It is widely recognised (Kitterød 2001) that studies based on time diaries are one of most reliable and valid data sources concerning time use. By using the time diaries it will be possible to report activities as they naturally and sequentially occur in the daily work of academics, and therefore explore actual behaviour. Time diaries also allow participants to record experiences of their daily activities, and Bolger, Davis & Rafaeli (2003) documented therapeutic outcomes from this self-reflective data collection process.
Using time diaries has been endorsed by researchers in educational leadership and management (Morrison 2007). Time diaries have been used to examine the ways in which heads of schools and faculties manage the time for professional activities (Earley & Fletcher-Campbell 1989). A time diary method has been used to explore internet use (Ishii 2004; Collopy 1994; Nie & Hillygus 2002) and has been seen as an ideal method to detect the new and unanticipated activities, such as the use of new communication technologies (Robinson & Bostrom 1994). This approach has a potential for professional development and reflective practice on the use of the academics’ time. Another advantage of the time diary method is that it can measure simultaneous usage patterns, particularly in the context of understanding academics’ use of the internet in their teaching, research and administrative tasks.

The ways in which academics manage their time for profession activities was explored by the use of the time dairy method in the empirical context of a regionally based Australian university. Combined with reflective statements from the diaries and the focus groups, the time diary records were collected, aggregated, collated and analysed in order to get a better understanding of the workday experiences. The project used a seven-day work schedule instrument (Harms & Gershuny 2009) and purposive rather than random samples of the participants, as has been done in the vast majority of the time diary studies (Bolger et al. 2003; Pentland et al. 1999; Nie & Hillygus 2002).

Research participants were fulltime academics from different faculties across Charles Sturt University who were asked to make a continuous recording of their daily working activities. A fixed-time schedule was used, where the spacing of intervals was an hour, which is considered to capture the change process in daily work activities (Bolger et al. 2003). A continuous recording allowed participants to determine freely the time when one activity ends and another begins. The first set of the diaries was open-ended and once the participants identified and captured specific types of activities we developed pre-coded diaries (Harms & Gershuny 2009). We used the random-hour technique (Pentland et al. 1999) in which research participants were reporting on a smaller segment of the day. The participants were requested to maintain a schedule of entries every 3 hours as a minimum. Initially, we decided to employ paper and pencil diaries which is still the most commonly
used approach in time diary research (Bolger et al. 2003). Because this method places substantial time demands on the participants, participants were given incentives in the form of small individual research funds.

The time diary sheet to be filled out (a shortened version is contained in Appendix 1) was a 24 hour time diary and included the following main categories of daily activities:

- Communicating with students
- Subject administration
- Subject preparation
- Subject delivery
- Research
- Service and general administration

These activities were further broken down on the time sheets so that the research activity included hours spent on grant preparation, reviewing articles for journals, filling out ethics forms, research meetings with co-authors and other activities associated with research.

Both main activities and possible parallel activities are captured in time diaries. Parallel tasks (often called secondary activities), such as searching the internet for appropriate video clips to use in teaching while answering student emails, were recorded. As academics often do tasks simultaneously, registration of the parallel activities provided the most complete picture of academics’ time use. Where multiple activities were reported in an hour, the academics’ time was assumed to have been split equally between the reported activities.

Apart from capturing the amount of time academics spend on different daily activities we use the time diary method to explore the subjective evaluations of the academics’ daily experiences. A three unit measurement scale was used to self-record the level of effectiveness and emotional satisfaction felt by the academics at the end of a working day. Exploratory regression analysis was used for empirical
assessment of the relationships between the amount of time spent on particular activities and reported levels of efficiency and emotional satisfaction.

The protocol for filling out the time dairies was given to the participants in February 2011, and subsequently one focus group was held in April 2011 in order to obtain comments on the initial data collecting, after which the categorization in the time diary of some activities were expanded and other activities were contracted so as to better match the daily experiences of the participating academics. During the first two weeks of the research project we ran a pilot test on the small group of academics. We maintained ongoing contact with the participants by acknowledging that filling out the time diary sheets was time-consuming and that the project relied on the goodwill of the academics involved.

RESULTS

An initial database of time diaries was compiled during the testing of the paper version of the diary tool. Eight academics from three Faculties - Business, Science and Arts - from Charles Sturt University filled out 278 daily diary sheets. All eight academics held positions as Lecturers and Senior Lecturers with both teaching and research responsibilities. None of the eight had significant university leadership roles. Of the 278 diary sheets submitted, 265 sheets revealed information about academics’ use of time, and 223 sheets revealed information about academics’ self-evaluations of their emotional response to their work and also the work effectiveness of their days. Table 1 reports summary statistics on the 265 sheets revealing academics’ use of time.

Average hours of a working day reported by the academics were 9.27 which included both weekdays and weekends. Academics reported working very long days in some periods as well as a significant number of weekends. There were large variations in activities across days with the reported standard deviations of activities being greater than the values of the average hours for those activities. The diary sheets revealed few days with large blocks of time devoted to single activities, rather academics split their hours and days across multiple activities.
As a proportion of total working hours reported by the academics, the delivery of subjects - teaching of lectures or tutorials, conducting labs or delivering seminars - took the least amount of time at only 9 percent of academic time. The activity which consumed the largest proportion of academic time was research at 26 percent of reported hours, followed by service and general administration at 21 percent. Direct communication with students through electronic or non-electronic means consumed 16 percent of academics’ reported hours.

The participating academics were asked to rate their day emotionally on a scale of “Good”, “OK” and “Poor”, as well as rating how effective they believed their day was. There was a high degree of correlation between the two ratings with a correlation of 0.44 between the emotional rating and the effectiveness rating of the day. Academics were more likely to give a higher positive affect and effectiveness ratings on reported weekends than on weekdays. Possibly this difference between weekdays and weekends was due to fewer interruptions and more self-directed activities on the weekends.

A probit regression was conducted on the emotion and effectiveness ratings using the STATA 11 (StataCorp 2009) to ascertain the activities which made the participating academics more likely to indicate a “Good” emotional rating for that day. Table 2 reports the results of the probit analysis on the proportion of each activity for that day and the self-assessed effectiveness rating the academic indicated for that same day. There are positive and statistically significant relationships between the probability of an academic indicating a “Good” day and the proportion of the day spent on subject administration and also on research. None of the other activities had a statistically significant relationship with the emotional rating for the day given by the academics, although the proportion of the day devoted to communicating to students and to service and general administration had a negative but statistically insignificant impact on the probability of given a “Good” rating for the day. The effectiveness rating of the day given by the academics had no statistically significant relationship with the activities undertaken in the day.
DISCUSSION

The results from the analysis of the pilot time diary data have confirmed for these academics many of the findings made in earlier surveys of academics (Anderson et al. 2002; McInnis 1999; Jensen & Morgan 2009). While this study only draws on the personal experiences of a small sample of academics from one institution, we believe the data is nonetheless valuable. The academics participating in the study are drawn from multiple faculties, disciplines, ages and genders. We think that their experiences are not dramatically different from the experiences of research and teaching academics at other Australian universities. This contention is supported by the fact that the results of the study align with earlier Australian studies.

Australian academics have long workweeks with highly fragmented working days spent meeting the demands from students and administration while attempting to perform their core tasks of teaching, research and service. The participants in the pilot study were found to be working far longer weeks, including weekends and hours well outside the core day. If the time spent communicating with students is considered part of the teaching tasks of academics, in a typical day academics were found to be working 6.8 hours per day to perform their teaching and general administration roles. Consequently, academics can only meet their research target by working a longer day of 9.3 hours per day.

The academics in the study worked very fragmented days, because the academics frequently reported engaging in three to six different tasks in a one hour period. The inability of academics to devote large blocks of time to individual tasks and the constant interruption of activities is similar to the “vicious work-time cycle” in software engineers’ workdays found by Perlow (1999), where the fragmentation of activities significantly reduced the productivity of the engineers. Communication with students, either directly through conversation, phone calls and emails or indirectly through electronic forum posting and announcements, was found to consume 1.5 hours per day or 16% of the academic’s total time.
We found that the academics in the study were more likely to give a positive emotional rating for the day if they were engaged in subject administration or research tasks for that day. Academics working on weekends were also more likely to give a positive emotional value for the day. A possible explanation for these findings is that academics are happier when they are engaged in self-directed tasks, such as conducting their own research or grading papers.

Usage of the time diary method raised the question about reliability of the data collection process, such as the extent to which participants comply with instructions, particularly if they were completing daily time diaries retrospectively. Obviously, there is the retrospection error occurring when the paper and pen diary is not at hand (Bolger et al. 2003). We believe that because of the highly-motivated participants (academics are increasingly concerned and critical of the workload policies at Australian universities) the data collection was reasonably accurate. For future research on this topic, electronic diaries (Green 2006) can be used to record the time of entering the data into daily records therefore verifying compliance of the participants. Also, the experience sampling method (ESM) which is a signal-contingent method of data collection (Hektner et al. 2007) may be used to address this problem.
References


StataCorp (2009) *STATA: Release 11*, Statistical Software. College Station TX: StataCorp LP.


Appendix 1: Sample time diary for partial day

<table>
<thead>
<tr>
<th>Faculty:</th>
<th>How was your day emotionally?</th>
<th>Good</th>
<th></th>
<th>Ok</th>
<th></th>
<th>Poor</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Day:</td>
<td>How effective were you today?</td>
<td>Good</td>
<td></td>
<td>Ok</td>
<td></td>
<td>Poor</td>
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<tr>
<th>Time</th>
<th>5am</th>
<th>6am</th>
<th>7am</th>
<th>8am</th>
<th>9am</th>
<th>10am</th>
<th>11am</th>
<th>12noon</th>
<th>1pm</th>
<th>2pm</th>
<th>3pm</th>
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</table>

Communicating with students
By email
By phone/Skype
By forums/announcements
By face-to-face
Subject administration
Marking assignments
Marking exams
Entering gradesheet
Setting up Interact
Setting up MSI
Moderation
Subject co-ordination
Subject preparation
Developing lectures
Developing tutorials
Developing exams
Developing online content
Developing materials
Subject delivery
Delivering lectures/seminars
Delivering tutorials/labs
Research
Research administration
Reviewing/refereeing
Reading literature
Writing
Grant preparation
Meetings for research
Thinking/planning/general research
Supervision of PhD/DBA students
Service and general admin
Committee attendance
Course/discipline administration
Community/professional engagement
Professional development/training
General admin/internet/email
Travel for
Conversations with colleagues
Other (include category)
Table 1: Summary of daily activities for eight academics from 265 time sheets

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average (Hours)</th>
<th>Std. Dev. (Hours)</th>
<th>Percentage of Average Day (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating with students</td>
<td>1.49</td>
<td>1.91</td>
<td>16.0</td>
</tr>
<tr>
<td>Subject administration</td>
<td>1.12</td>
<td>1.89</td>
<td>13.4</td>
</tr>
<tr>
<td>Subject preparation</td>
<td>1.38</td>
<td>2.02</td>
<td>14.8</td>
</tr>
<tr>
<td>Subject delivery</td>
<td>0.81</td>
<td>1.57</td>
<td>9.0</td>
</tr>
<tr>
<td>Research</td>
<td>2.47</td>
<td>3.26</td>
<td>25.8</td>
</tr>
<tr>
<td>Service and general administration</td>
<td>1.99</td>
<td>2.56</td>
<td>21.0</td>
</tr>
<tr>
<td>Total</td>
<td>9.27</td>
<td>2.79</td>
<td>100.0</td>
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</table>
Table 2: Results of a probit analysis on the probability of an academic reporting a “Good” day emotionally

Dependent variable: Probability of experiencing a “Good” day emotionally as an academic

<table>
<thead>
<tr>
<th>Proportion of day spent on:</th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating with students</td>
<td>-0.76</td>
<td>0.70</td>
</tr>
<tr>
<td>Subject administration</td>
<td>1.97**</td>
<td>0.56</td>
</tr>
<tr>
<td>Subject preparation</td>
<td>0.55</td>
<td>0.57</td>
</tr>
<tr>
<td>Subject delivery</td>
<td>0.58</td>
<td>0.64</td>
</tr>
<tr>
<td>Research</td>
<td>1.19**</td>
<td>0.45</td>
</tr>
<tr>
<td>Effectiveness rating of day</td>
<td>1.46**</td>
<td>0.20</td>
</tr>
</tbody>
</table>

**p<.01

Number of observations: 220

Pseudo-$R^2$: 0.31

Note: Proportion of day spent on service and general administration was dropped as an explanatory variable as time variables sum to one for the day.