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# Perception of Cambridge A-Level students with respect to their technology engagement

Dr. Purushothaman Ravichandran\*

*Kolej Yayasan UEM, Lemabah Beringin, Perak*

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## Abstract

This research is an attempt to capture students' technology engagement that fosters meaningful learning among students of Cambridge A-Level programs at Kolej Yayasan UEM (KYUEM), Malaysia. Three hundred and ninety students were asked to answer an online questionnaire, which was designed using Google docs and the results generated were further analysed using SPSS 11.5. The hypothetical testing showed no significant difference in the usage of computers in leisure activities, such as Facebook, blogging, electronic mail and internet browsing at home and in college. Further, results showed that majority of the students make good use of the internet and electronic mail facilities at college. However, the proportion of students who agreed or disagreed that computers were accessible to them whenever needed within the college campus was observably equal.

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*Keywords:* Technology engagement; blogging; Google docs

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## 1. Background

This study examines the perceptions and preparedness of A-Level students at Kolej Yayasan UEM, Malaysia, by capturing the students' engagement with technology in their learning activities. Extensive published evidence affirm that engagement and motivation are critical elements in student success and learning. Researchers agree that engaged students learn more, retain more, and enjoy learning activities more than students who are not engaged (Dowson and McInerney, 2001; Hancock and Betts, 2002; Lumsden, 1994). Many school-level studies have identified higher levels of student engagement as important predictors of scores on standardized achievement tests,

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\* Corresponding author. Tel.: +6 017-654-2121; fax: +6 03-64-60-1234  
*E-mail address:* [computerravi@hotmail.com](mailto:computerravi@hotmail.com)

classroom learning and grades, and student persistence (National Research Council, 2000). Therefore, based on these research notions, students' technology engagement is conclusively defined as the level of students' technology ability that foster students' participation and intrinsic interest in their meaningful learning activities within a school environment. Thus, a conceptual model design of students' technology engagement in the context of this study is shown in Fig. 1.

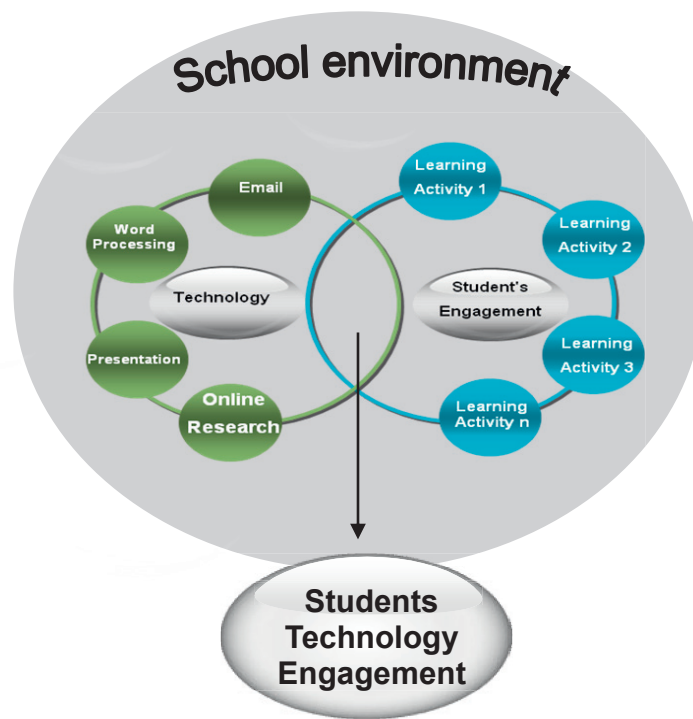


Fig. 1. Conceptual model design of students' technology engagement

## 2. Literature Review

### 2.1. Students' technology engagement and learning environment

Student engagement is an important factor for student motivation during their learning process. The more students are motivated to learn, the more likely it is that they will be successful in their efforts. Many factors influence student motivation. These include teacher motivation, pedagogical strategies, availability of learning tools, technology support and good learning environment. However, to sustain such motivation gained by the students, it is important that the school environment in which their learning process evolves be in line with that of the students' expectation. Therefore, it is mandatory for each student to get such support from the school where his learning begins to emerge. The most common forms of engagement by Australian children have been found to be electronic mail and information searches (Aisbett, 2001). Similarly, Livingstone, & Bober (2004) reported United Kingdom youth (9 to 19 year olds) as using the internet to communicate, for peer-to-peer interaction and to seek information. Also, a report published by the National School Board Association (2007) found that 96 percent of youth in this age range have used social networking tools at some time, with their average engagement with them rivaling time spent watching TV at 9 hours a week. Yet perhaps the most stunning statistic of their study is that the topic of most conversation at these sites is education—60 percent of the students' surveys said they use the sites to talk about education topics and more than 50 percent use it to talk about specific schoolwork. In yet another research conducted by Look (2005), a review of 219 studies on the use of technology in education consistently found that

students in technology rich environments experienced positive effects on achievement in all subject areas. Thus, this study attempts to find student's technology engagement that foster student's participation and intrinsic interest in their meaningful learning activities within the school environment.

### 3. Research Methodology

Since this study used quantitative research design, the study is descriptive and sets out to describe behaviour by measuring certain variables. Previous research questionnaires that had been used to capture students/teachers perception of technology usage in the college were compared with some of the universally accepted research questionnaires, such as Becta, to finalize the final version of the questionnaires used in this study. The data obtained from the respondents of online questionnaire was then analyzed using the SPSS version 11.5.

### 4. Population and Sampling Technique

The surveyed population in this study consisted of all students undergoing their A-Levels at a residential college in Malaysia. A total of 390 students were asked to respond to an online questionnaire. Hence, purposive sampling method was used, as it is a sampling method in which elements are chosen based on purpose of the study. Also, purposive sampling may involve studying the entire population of some limited group. Thus, all the first year and the second year students of A-Levels at KolejYaysan UEM, Malaysia were involved in this study.

### 5. Research Instrument

Although 4 different questionnaires were used among 4 different groups, in the context of this study, this article would focus on the information gathered from students' questionnaire only. The Students' questionnaire consisted of 11 main questions, which had sub-level options, and one open-end question. Likert rating scales with five levels were used with options ranging from the extent to which a person strongly disagrees to agrees with the question. The questions for students focused on (1) student perceptions of the frequency with which specific technologies are used in their learning activities and (2) student perceptions of the impact of technology on their learning activities. Thus, the data captured from the respondents of online questionnaire would serve as one of the benchmarks for implementing an ICT strategic planning process for the college. Further, this would also enable the college to prioritize efforts needed to establish a technology-based learning system that would be appropriate for the pedagogical community.

### 6. Research Questions

The main research question for this study is to investigate how far the present student community is able to engage in meaningful learning with the current level of technological supports provided by the college. From this main question emerged the following sub-questions:

- Is there any difference between students' perception of using computers and its influence on their learning activities in college?
- Is there any difference between students' perception of using computers for learning activities in college and its use at home?
- Is there any difference in students' perception of using computers in college with respect to gender?

#### 6.1. *Engagement of students in different computer related learning activities at KYUEM*

Table 1 summarizes the usage of different computer applications/activities that students are engaged in while they are at KYUEM. The results shows that more than 50% of the students use computers at KYUEM mainly to browse the internet, to check their e-mails, to find information on Wikipedia, to access their facebook accounts and to make Word documents/PowerPoint presentations/Excel spread sheets. Further, it was observed that the usage of Microsoft word, PowerPoint, Blogging and Bing was slightly higher among the female students. On the other hand,

it was observed that there was slightly higher participation of male students in usage of internet, e-mails, Wikipedia, Facebook, Excel, online project collaboration, digital photography/film making and database usage. Table 3 presents data on the involvement of students in different activities while they use computers at KYUEM.

Table 1. Common usage of computers at KYUEM

	Male	Female	Overall
www	96.80%	95.90%	96.30%
Email	95.20%	94.60%	94.90%
Wikipedia	94.40%	93.90%	94.10%
Face book	95.20%	91.20%	93.00%
Microsoft Word	91.20%	92.60%	91.90%
Others	78.40%	86.50%	82.80%
Power point	80.80%	83.10%	82.10%
Excel	55.20%	54.10%	54.60%
Blogging	46.40%	48.00%	47.30%
Online collaboration project	46.40%	41.20%	43.60%
Digital photography	45.60%	36.50%	40.70%
Database	39.20%	38.50%	38.80%
Bing	29.60%	33.80%	31.90%
Digital film making	34.40%	27.70%	30.80%

## 7. Hypothesis Testing

### 7.1. Students' perception of using computers and its influence on their learning activities

Table 2 shows the proportion of students who support, reject and who are unable to comment on the idea that the use of computers has improved/influenced their learning activities. It was observed that the majority of students (those who agreed) significantly support the idea that computers are essential in their learning process and helps them improve their learning activities by making it more engaging and interesting. Further, it was observed that close to one-fifth of the students disagreed that they make good use of email and internet at home, however this proportion was significantly less than the proportion of students who agreed that students make good use of emails and internet at KYUEM. Lastly, 50% of the students agreed that they usually get access to computers at KYUEM whenever they need to compared to 45% of the students who disagreed that they usually get access to computers whenever they need to. However, the difference in the proportion of users who agree and disagree on the accessibility of computers was not statistically significant. Thus, we conclude that computers are essential in learning process, improves learning process by making it more interesting. Also, majority of the students make good use of internet and e-mail facility. However, the proportion of students who agreed or disagreed that computers were accessible to them whenever needed was observably equal.

Table 2. Students' perception of using computers and its influence on their learning activities

	Proportion of students who Agree	Proportion of students who disagree	Proportion of students unable to comment	Z-value	Significance (p-value)
It is essential that I use computers in my learning.	95.24%	2.56%	2.20%	21.66	<0.0001
Using computers at KYUEM improves my learning.	91.58%	4.03%	4.39%	20.48	<0.0001
When I use computers at KYUEM, learning is more interesting.	90.48%	5.49%	4.03%	19.87	<0.0001
I make good use of e-mail facility at KYUEM.	79.85%	15.75%	4.40%	14.99	<0.0001
I make good use of the internet at KYUEM.	87.55%	9.89%	2.56%	18.15	<0.0001

I usually get access to computers at KYUEM whenever I need to.	50.18%	45.05%	4.77%	1.20	0.2303
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### 7.2. Students' perception of using computers for learning activities in college and its usage at home

Table 3 shows the usage of different computer related learning activities for students at home and at KYUEM. The results indicate that the usage of activities involving word processing was significantly higher at KYUEM compared to usage at home. Similarly, the usage of activities involving 'online collaboration', 'digital photography', 'digital filmography' and 'other activities' was higher at KYUEM compared to usage at home. On the other hand, there was no significant difference in the usage of computers in learning activities of students involving 'PowerPoint', 'www', 'email', 'blogging' and 'facebook' among students at home and KYUEM. Thus, we conclude that usage of academic related activities such as word processing, online collaboration, digital photography, digital filmography, and 'others' is more predominant at KYUEM. However, there was no significant difference in the usage of computers in leisure activities such as facebook, blogging, email and internet browsing at home and at KYUEM.

Table 3. Students' perception of using computers for learning activities in college and its usage at home

	KYUEM user proportion	Home user proportion	Z-Value	p-value
Word processing**	91.94%	84.98%	2.55	0.0109
PowerPoint	82.05%	78.39%	1.07	0.2827
WWW	96.34%	93.77%	1.38	0.1670
Online collaboration**	43.59%	25.27%	4.50	<0.0001
Digital photography**	40.66%	32.23%	2.05	0.0408
Digital filmography**	30.77%	17.58%	3.60	0.0003
Email	94.87%	92.31%	1.22	0.2213
Blogging	47.25%	42.12%	1.21	0.2282
Facebook	93.04%	89.01%	1.65	0.0995
Others**	82.78%	68.13%	3.98	<0.0001

### 7.3. Student's perception of using computers in college with respect to gender

The proportion of male and female students involved in different computer related learning activities is summarized in Table 4. The results indicate that the proportion of male and female students engaged in different learning activities involving computers at KYUEM do not differ significantly. Thus, we conclude that there is no difference in the proportion of male and female students engaged in different learning activities involving computers at KYUEM.

Table 4. Students' perception of using computers for learning activities in college with respect to gender

	Male	Female	Z-value	p-value
Microsoft Word	91.20%	92.57%	-0.41	0.6792
Excel	55.20%	54.05%	0.19	0.8497
PowerPoint	80.80%	83.11%	-0.50	0.6205
Database	39.20%	38.51%	0.12	0.9077
E-mail	95.20%	94.59%	0.23	0.8212
WWW	96.80%	95.95%	0.37	0.7082
Online Collaboration	46.40%	41.22%	0.86	0.3895
Digital Photography	45.60%	36.49%	1.53	0.1267
Digital Film making	34.40%	27.70%	1.19	0.2323
Blogging	46.40%	47.97%	-0.26	0.7954
Facebook	95.20%	91.22%	1.29	0.1975
Wiki	94.40%	93.92%	0.17	0.8661
Bing	29.60%	33.78%	-0.74	0.4598

Others	78.40%	86.49%	-1.76	0.0779
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## 8. Conclusion

Majority of the students make good use of internet and e-mail facility. However, the proportion of students who agreed or disagreed that computers were accessible to them whenever needed was observably equal. Further, the difference in the proportion of users who agree and disagree on the accessibility of computers at KYUEM was not statistically significant. On the other hand, there was no significant difference in the usage of computers in learning activities of students involving 'PowerPoint', 'www', 'email', 'blogging' and 'facebook' among students at home and KYUEM. The proportion of male and female students involved in different computer related learning activities had no difference at KYUEM. Although, digital skills divide into very different sub-skills of which only some are important and used in school. What seems to be confirming from the results is that the students' informal learning of ICT and experiences in using ICT are far more attractive than the school can typically offer. It is therefore high time for the staff and management to invest more time and resources that can provide more meaningful technology engagement amongst the students of KYUEM.

## References

- Anderson, T. (2003). Modes of interaction in distance education: Recent developments and research questions. In M. Moore (Ed.) *Handbook of Distance Education*. (p. 129-144). Mahwah, NJ.: Erlbaum.
- Aisbett, K. (2001). *The Internet at Home*, Sydney: Australian Broadcast Authorities  
[URLhttp://www.aba.gov.au/newspubs/documents/InternetAtHome.pdf](http://www.aba.gov.au/newspubs/documents/InternetAtHome.pdf) Accessed 7 August 2006.
- Barron, A., Kemker, K., Harnes, C., & Kalaydjian, K (2003). Large-scale research study on technology in K-12 schools: Technology integration as it relates to the national technology standards. *Journal of Research on Technology in Education* 35(4), 489-507.
- Bober, M., & Livingstone, S. (2004). UK children go online. Surveying the experiences of young people and their parents. London: London School of Economic and Political Science.
- Bullock, D. (2004). Moving from theory to practice: an examination of the factors that pre-service teachers encounter as they attempt to gain experience teaching with technology during field placement experiences. *Journal of Technology and Teacher Education*, 2, 211-237. Russell, Bebell, O'Dwyer & O'Connor, 2003.
- Connell, J., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system process. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self process in development: Minnesota Symposium on Child Psychology*, (Vol. 2, pp. 167-216).
- Dahlgren G. (1997). Strategies for reducing social inequities in health-vision and reality. In: Ollila E., Koivusalo M., Partonen T. (eds), *Equity in Health Through Public Policy*. Helsinki: STAKES (National Research and Development Center for Health and Welfare).
- Doering, A., Hughes, J., & Huffman, D. (2003). Preservice teacher: Are we thinking with technology? *Journal of Research on Technology in Education*, 35, 342-361.
- Dowson, M., & McInerney, D. M. (2001). Psychological parameters of students' social and work avoidance goals: A qualitative investigation. *Journal of Educational Psychology*, 93(1), 35-42.
- Fishman, B. (2000). How activity fosters CMC tool use in classrooms: Re-inventing tools in local contexts *Journal of Interactive Learning Research*, 11(1), 3-27.
- Grove, K., Strudler, N., & Odell, S. (2004). Mentoring toward technology use: Cooperating teacher practice in supporting student teachers. *Journal of Research on Technology in Education*, 37(1), 85-109.
- Grove, S.J., Carlson, L. and Dorsch, M.J. (2007) Comparing the application of Integrated Marketing Communication (IMC) in magazine ads across product type and time. *Journal of Advertising* 36 (1): 37-54.
- Gordon, R.J. (2000). "Does the 'New Economy' Measure Up to the Great Inventions of the Past?", Working Paper 7833, NBER.
- Hancock, V., & Betts, F. (2002, April 1). Back to the future: Preparing learners for academic success in 2004. *Learning and Leading with Technology*, 29(7), 10-14.
- Johnson, M. K., Crosnoe, R., & Elder, G., Jr. (2001). Students' attachment and academic engagement: The role of race and ethnicity. *Sociology of Education*, 74, 318-340.
- Kennedy, C. (2000). Implications for new pedagogy in higher education: Can online technology enhance student engagement & learning? (Doctoral dissertation, University of California at Berkeley). Retrieved ERIC database. (ED443382)
- Look, D. (2005). Discussion Paper: Impact of Technology on Education, PUSD Excellence Committee, December 2005. Available from <http://pleasanton.k12.ca.us/Superintendent/Downloads/Technology.pdf>
- Lumsden, L.S. (1994). Student Motivation to Learn. Educational Resources. Information Center, Digest Number 92.
- McKendrick, J. H., & Bowden, A. (1999). Something for everyone? An evaluation of the use of audio-Visual resources in geographical learning in the UK. *Journal of Geography in Higher Education*, 23(1), 9-20. Retrieved June 18, 2001 from Academic Search Elite on GALILEO: <http://www.galileo.peachnet.edu>
- Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: A review of the literature. *Journal of Information Technology for Teacher Education*, 9(3), 319-342.
- National Research Council (2000). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academies Press.
- National School Board Association (2007). *Creating & connecting: Research and guidelines on online social and educational — networking*. Alexandria, VA.
- Newman, D. (1992). *Technology as support for school structure and school restructuring*. Phi Delta.

- Putnam, R., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher*, 29(1), 4-15.
- Roblyer, M.D. (2004). If technology is the answer, what's the question? Research to help make the case for why we use technology in teaching. *Technology and Teacher Education Annual*, 2004. Charlottesville, VA: Association for the Advancement of Computing.
- Rockman et al. (2000). 'Source: The Laptop Program Research'. Available from <http://rockman.com/projects/laptop/>
- Savery, J. (2002). Faculty and Student Perceptions of Technology of Technology in Teaching. *The Journal interactive Online Learning*, 1(2). <http://www.ncolr.org/jiol/issues/PDF/1.2.5.pdf>. (Retrieved 2 December 2005).
- Skinner, E.A., & Belmont, M.J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85(4): 571-581.
- Smerdon, Becky A 1999. "Engagement and Achievement Differences Between African American and White High School Students". *Research in the Sociology of Education and Socialization*. 12:103-134.
- Smith, B. K., & Blankinship, E. (2000). Justifying imagery: multimedia support for learning through exploration *IBM Systems Journal*, 39(3/4), 749-
- Turner, J. C., Thorpe, P. K., & Meyer, D.K. (1998). Students' reports of motivation and negative affect: A theoretical and empirical analysis. *Journal of Educational Psychology*, 90, 758-771.
- Wishart, J., Blease, D. (1999). Theories underlying perceived changes in teaching and learning after installing a computer network in a secondary school. *British Journal of Educational Technology*, 30 (1), pp.25-4.1