Preparing Educators towards Educational Technology: Empirical Study of Students' and Educators' Perception in Learning Programming Languages

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Abstract

This paper wills emphasis the students' and educators' perception in learning programming languages between e-learning and 'chalk & talk' teaching method (traditional classroom) used for teaching students. The purpose of this study is to determine if students prefer learn programming languages through the use of variety electronic devices or media with multimedia features, by self-study method through text books or by attending traditional classroom lectures. It also will look in what types of multimedia elements do students and computing educators think should be included in e-learning environment for teaching and learning programming languages. This study needs to be carried on the issues and implementation on educator's perspective towards the rapid changing in educational technology. This is needed in order to prepare Malaysian educators towards educational technology.

Keywords: 'chalk & talk', e-learning, educational technology, self-study, computer-based training

Introduction

Current mode of teaching, which is dependent on time and place, may be not enough for the present society, but may not be able to accommodate and produce the levels of education needed by future society. Although in certain areas traditional teaching methods still work best, it cannot be denied that education technology can expand the teaching and learning experience in ways only limited by one's own creativity. Educational technology can help to gain and hold attention, makes points clearer, makes students more on self-study, stimulate discussion and in general, enhance the learning process, if it also includes the appropriate human elements.

In this paper, the technology, which is the computer and available software offer, a means of ensuring the desired leaning activity, be carried out cooperatively. The flexibility of such a learning environment promoted learning based on the abilities and interests of the students without compromising the main objective that was the concept planned at the beginning of the study. The existence of a new technology provides the opportunity to match leaning with new learning environment in order to gain maximum benefit.

At the forefront, we must acknowledge that the challenges facing today's learners in K-20 systems also face pre-service and in-service educators, and those who prepare educators. Researchers are increasingly calling for learning and professional development approaches that lead to 'Emerging Communities of Practice' (McNabb & McCombs, 2001). The National Academy of Sci-

ences Reports entitled, How People Learn (Bransford *et. al.*, 1999) make new approaches to assessment a major priority. Still others argue that using electronic networks for educational purpose causes large disturbances to close-ended nature of twentieth-century classroom practices (Heflich, 2001; Jones, 2001; McNabb, 2001). These disturbances stem from misalignments among curriculum accountability policies that govern learning activities and research practices and policy.

Most educators are convinced that appropriate uses of information and communication technologies can help revolutionize education with needed reforms. However, many also caution that this won't happen without systematic changes. If our educational systems are going to be transformed to better serve learners, we are going to have to overhaul the traditions of our learning cultures. Intergenerational communities of learner's can provide the human and material resources that learner's needed on to comply with core and advanced learning standards. The goal in this paper is to call for fundamental changes in preparing our educators towards educational technology changes

Background

The purpose of this research is to determine if students prefer learn programming language through the use of e-learning material or traditional classroom ('chalk & talk'). A study also will look on educator's perception on delivering the course in their class. The questionnaire will cover the learning methods experienced by the respondents in learning programming languages. The result of this survey is a first step, which can be used by potential educators to produce a better learning environment that will lead to 'facilitators of knowledge' not the 'purveyors of knowledge' (Hussain *et. al.*, 2000).

Data Collection

The questionnaires will be distributed at tertiary level from one of Malaysian Higher Institutions. This represents 110 first year students and 35 educators who are taking and teaching computer courses. A total of 110 (80 students and 30 educators) usable responses were available for analysis.

Analysis of Results

The survey results and analysis have been done and some discussions have been made throughout the respondent's feedback.

Common Method Used for Learning Programming Language

Method		**Educators**			**Students**				**Total**			
Common Method Used	**Frequency**		**Percentage**		**Frequency**		**Percentage**		**Frequency**		**Percentage**	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Self-study through books	23	7	76.7	23.3	70	10	87.5	12.5	93	17	84.5	15.5
Chalk & Talk	21	9	70.0	30.0	65	15	81.3	18.7	86	24	78.2	21.8
Computer-based training	18	12	60.0	40.0	50	30	62.5	37.5	68	42	61.8	38.2
Internet resources	5	25	16.7	83.3	35	45	43.8	56.2	40	70	36.4	63.6
Other media	2	28	6.7	93.3	5	75	6.3	93.7	7	103	6.4	93.6

Table 1: Common Method Used for Learning Programming Language.

Based on the analysis, it can be seen, as shown in Table 1, that 84.5% of respondents experienced the self-study through book method, 78.2% the classroom teaching method, 61.8% through the use of Computer-based Training (CBT), 36.4% using Internet sources and only 6.4% using other media mainly

video. This indicate that the current most popular learning method used to learn programming languages is the self-study through book and less than half of the respondents used CBT method.

Most of respondents prefer the self-study and 'chalk & talk' rather than CBT. This indicates the combination between self-study and 'chalk & talk' is the highest preference among the respondents (84.5% & 78.2%).

The Drawback of Learning Methods on Effectiveness, Interesting, Convenience and Cost

Total of respondents (students & educators)										
	Self-study		Chalk & Talk		Comp-based Training		Internet		Other media	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Effectiveness										
Very effective	8	7.3	54	49.1	49	44.5	27	24.5	2	1.8
Effectiveness	59	53.6	49	44.5	43	39.1	37	33.6	12	10.9
Not effective	43	39.1	7	6.4	18	16.4	46	41.8	96	87.3
Interesting										
Very interest	5	4.5	51	46.4	41	37.3	19	17.3	3	2.7
Interesting	60	54.5	43	39.1	55	50.0	27	24.5	17	15.5
Not Interesting	45	40.9	16	14.5	14	12.7	64	58.2	90	81.8
Convenience										
Very convenience	46	41.8	31	28.2	43	39.1	41	37.3	1	0.9
Convenience	47	42.7	48	43.6	41	37.3	41	37.3	15	13.6
Not convenience	17	15.5	31	28.2	26	23.6	28	25.5	94	85.5
Cost										
Very cosly	48	43.6	53	48.2	47	42.7	35	31.8	73	66.4
Costly	47	42.7	45	40.9	34	30.9	31	28.2	34	30.9
Not costly	15	13.6	12	10.9	29	26.4	44	40.0	3	2.7

Table 2: Learning Methods on Effectiveness, Interesting, Convenience and Cost.

From Table 2, it can be calculated that 60.9% of the respondents rated the self-study methods as effective and very effective, while a total of 93.6% rated classroom teaching method the same compared to a total of 83.6% for CBT. As comparison to Internet and other media, which are 58.1% and 12.7%, shows that most of the respondents are not widely use Internet or other media. This shows that majority of the respondents are of the opinion that classroom teaching is the most effective method compared to the other methods being evaluated.

In evaluating the level of interest of the those methods, 59.0% rated the self-study method as interesting and very interesting, while 85.5% rated the same for classroom teaching and 87.3% for CBT, 41.8% for Internet and only 18.2% choose for other media. This shows that most respondents think that learning programming languages through CBT is the most interesting while self-study through book is the least interesting.

In comparing the convenience of those methods, a total of 84.5% rated the self-study methods as the convenience and very convenient, while 71.8% rated the same for classroom teaching and 76.4% rated for CBT as convenient and very convenient, meanwhile for Internet the rate is 74.6% almost the same rate for CBT and the lowest is 14.5% for other media. This shows that most respondents think that learn-

ing through self-study is more convenient than other methods, although CBT and Internet came a close second.

Comparing the cost of those methods, 86.3% of respondents rated the self-study method as costly to very costly, while 89.1% rated the same for classroom teaching, and 73.6% rated for CBT as costly and very costly, 60.0% said that Internet is very costly and costly and the highest is other media, which is 97.3%

Preference of Using Learning Methods for Teaching & Learning Programming Language

Method		Educators			Students	
	Freq	Percentage	Ranking	Freq	Percentage	Ranking
Self-study through books	6	20.0	3	15	18.8	3
Chalk & Talk	8	26.7	2	31	38.8	1
Computer-based Training	9	30.0	1	25	31.3	2
Internet resources	5	16.7	4	7	8.8	4
Other media	2	6.7	5	2	2.5	5

Table 3: Ranking of Preference of Using Learning Method.

Based on the analysis shown in Table 3 (ranking system 1- is the most preferable, 2 – preferable, 3-midle preferable, 4 – not preferable and 5 – last choice of media should be selected) , students identified that 'chalk & talk' is the most preferred method compared to other method such as computer-based training, self-study, Internet resources and other media. This is due to the interactivity and also the 'touch' of educators that can incorporate within the e-learning environment. Meanwhile the CBT is the most preferable by educators. This is due to educators having learned the technology in teaching. If this can be combined it can be as learner-centered society based.

Discussion

One of the original unwritten aims of this research was to seek the perception on student as well as educators on learning programming languages such as C, C++, Pascal, COBOL and other programming languages that contains in the course outline for student who takes Computer Science or IT first degree programmed in Malaysia. This empirical study gives an impact the way students and educators perception in learning programming languages. Thus this evidence shows that educators who have gone through the first degree programmed has the capabilities in learning new languages just by self-study through books and CBT but for students they need a guidance specially in classroom, before they can build their knowledge on their own.

Why choose E-learning? A simple question but full of benefits, that a well-designed e-learning environment is the most effective alternative for many educators specially in teaching the children in this decade. Choosing the right media will enhance the capabilities in professionalism and achievement of educators. As shown in the study, this is the important task for educators in order to prepare themselves to become 'facilitators'. They should have the confidence in using those methods to teach the students specially students who take computer science and IT first degree programmed. The combination of 'chalk & talk' and computer-based training will make a big impact towards the students. This is due to the most popularity chosen by the students. Despite of educators, they have chosen the self-study and the

combination of computer-based training since this might be influence of their capabilities in constructive their knowledge on programming languages.

By the way, there is a little doubt on the Internet resources as part of the learning methods is hardly choose by respondents. This might be influenced by the capabilities of accessing the Internet. Most of the respondents tend to use Internet resources in the institutions not at home. The educational institutional in Malaysia have these capabilities but it varies between each of the institutions.

Conclusion

Educators are the key component to insure that e-learning media integration embellishes the teaching process. This research work has shown the perception on students as well as educators on learning method. The result shows that the students' perception on the educational technology can focus them towards the learner-centered society. Meanwhile for educators, the result shows the impact of e-learning material can change the way they teach. Therefore, this study needs to be carried on the issues and implementation on educator's perspective towards the rapid changing in educational technology. This is needed in order to prefer Malaysian educators towards educational technology.

Introduction of technology into educational institutions will tend to support educators as facilitators. Technology also will be use to increase educator's sense of professionalism and achievement as an educator towards the children in Information Age. Thus, this paper will be used to spearhead the function of educator as 'facilitator of knowledge' rather than 'purveyors of knowledge'. It also reflects on the new 'understanding' about learning and expanded information exchange capabilities.

References

Bransford, J., Brown, A.L., Cocking, R.R (1999). *How People Learn: Brain, Mind, Experience and School*. Wasington, DC: National Academy Press, 1999.

Heflich, D. (2001). *Breaching the Walls of a Cell: Changes Brought About by Electronic Networking.* Paper submitted to PT3 Vision Quest on Assessment in E-learning Cultures.

Hussain, H., Jais, J. & Rahman, Z.A. (2000). Multimedia Education Software as Effective Learning Tool for Proficiency in English. *International Seminar on Education and Training in an IT Environment – ISET 2000*, UNITAR, Petaling Jaya, Malaysia.

Jones, S. (2001). *Community and Culture in Education.* Paper submitted to the PT3 Vision Quest on Assessment in E-learning Cultures.

McNabb, M. & McCombs, B. (2001). *Designs for E-learning: A Vision and Emerging Framework.* A Reflection papers written by the members of PT3 Vision Quest Project. (Available online at http://www.pt3.org/VQ/newdesigns.php3).

McNabb, M.L. (2001). High-technology Ecosystems for Learning. Panel Presentation at *NCREL National Technology Conference*, Naperville, IL.

Biography

Hanafizan Hussain currently doing her PhD in Faculty of Creative Multimedia at Multimedia University. Her research areas are including e-learning and edutainment environment.

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