SHORT COMMUNICATION

Perception and attitude of pharmacy students towards learning tools

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Abstract: Use of technology in education has increased worldwide. Teaching methodologies are shifting from traditional classroom lectures to e-learning and computer-based learning. Pakistani students are also now fathoming necessity of acquiring tools for strengthening their knowledge and skills. The objective of present study was to analyze the shifting trends (perception and attitudes) of Pakistani Pharmacy students towards learning tools. A survey based study conducted on 296 students from various years of Pharmacy, studying in a state owned university, Karachi, Pakistan. This study was initially piloted and Cronbach's-alpha was computed for evaluation of internal consistency of questionnaire (for perception; 0.660, for attitude; 0.777 respectively). Data was computed by SPSS, version 16 (Crosstab) and Chisquare (P=0.05). Most of the students strongly agreed (53%; χ^2=495;P<0.05) that introducing technology will improve learning; books are reliable reading source (53%; χ^2=437.23;P<0.05) or book-reading is essential (50%; χ^2=360.36;P<0.05) while others disagreed that they only study from class lectures (31%; χ^2=17.22;P<0.05); not take classes (41%; χ^2=48.21;P<0.05); have used software (44%; χ^2=46.54; P<0.05). Majority of the students agreed on incorporating technology to improve learning. Other factors such as unavailability and expenditure of books influenced their ability to learn. This study might assist policy makers in developing policies that could improve learning.

Keywords: Learning tools, technology, e-books, software.

INTRODUCTION

The latest trend in training and development industry is the use of network technology (e-learning revolution) (Welsh *et al.,* 2003). E-learning is an open system and internet provides a vast variety of information for teaching and learning transaction and is attractive to both teachers and learners (Garrison, 2011).

Students have become more active learners by using digital technologies. Internet would make new knowledge-based communities where children and adults will interact with each other and hence students would explore, express and experience by their-own leaning (Muir-Herzig, 2004).

When a survey was conducted in private and public colleges of USA, college students showed a positive response about internet usage and its impact on their educational experience (Steve, 2002). In a study conducted by University of Arizona, e-learning group using interactive E-classroom out performed traditional classroom group as measured by the test scores (Zhang *et al.,* 2004). In another research, computer based learning was compared to traditional lectures, and it was found that student-learning was equivalent, but student's attitude became positive towards computer based learning after using it. They were able to organize their learning effectively (Dewhurst *et al.,* 2000).

E-books are text documents (digital format) used as a reading source in classroom. E-books could provide better options than traditional books (interactive dictionaries, text-to-speech, note taking etc) (Cavanaugh, 2003).

Woody *et al*. concluded that students did not prefer e-books over textbooks (Woody *et al.,* 2010). The students of Indian Institute of Science tend to use e-books more than faculty members and staff (Anuradha and Usha, 2006). Medical students of University of Utah recognized E-book as an effective source for distribution of course content and study but preferred paper over E-books in writing notes during lectures (Morton *et al.,* 2007).

In another study, it was found that there is higher use of e-books over print reserves. Students were satisfied with the use of e-books, despite some reported use problems (Rojeski, 2012). Students differed from one another in a number of ways (learning styles, learning approaches, their knowledge attitudes and levels of intellectual development) (Felder andBrent, 2005).

The objective of the present study was to determine the perception and attitudes of pharmacy towards various

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leaning tools. To the best of our knowledge, no such study is available in the current literature.

METHOD

Study population, sampling size and sampling method

An exploratory study was conducted to determine the perception and attitude of students towards the use of different learning tools. The sampling population was undergraduate pharmacy students of a public sector university, situated in Karachi, Pakistan. Pharm.D program in Pakistan consists of five years and students take admission after completing their high school. A high percentage is required for admission in public sector universities of Karachi, Pakistan. The sample size used was 296 respondents, calculated using Raosoft sample size calculator. Participants were informed about the purpose of study before giving the questionnaire and convenience technique were used for sampling. All questionnaires given were returned back without any drop out.

Pilot study

Questionnaire was first tested for its validity to generalize study results. For pilot study, questionnaire was randomly distributed to 10 pharmacy students. Minor changes were then made to improve the comprehensiveness and clarity of questions and to reduce time required for questionnaire completion. Results of Pilot study were not included in the final survey. In order to evaluate the internal consistency, Cronbach's alpha was computed. For the perception and attitude domain, it was found to be 0.660 and 0.777, respectively.

Instrument of analysis (questionnaire)

A close-ended questionnaire was designed. It comprised of three parts, first part was based on demographic data (Professional year of Pharm.D students, age, gender, year of study) and other two parts consisted questions related to perception and attitude of students towards learning tools, each comprises of five statements. Perception and attitude domains have response categories on Likert's scale (5=strongly agree, 4=agree, 3= neutral, 2=disagree, 1=strongly disagree). Respondents were instructed to either circle or tick most appropriate option in response category.

Data collection

After ascertaining validity of the study, a personally administered questionnaire was distributed to 296 pharmacy students (first to fifth professional years respectively). This study was conducted on students with average age of 20.5 years. The youngest student being 17 years and the oldest student being 24 years according to January 2013. Data was collected during first semester (from January- Mid February, 2013) (figs. 1 and 2).

Data evaluation

The data was entered in a statistical software (SPSS, version 16). The analysis was performed by descriptive statistics (Crosstab analysis) and by Chi-square at 0.05 level of significance.

Ethical Considerations

The study was conducted according to Declaration of Helsinki, 2008. Students were informed about the objectives of present survey and given option to withdraw at any time from the study without any obligation. Students were also ensured that their identity and personal information will not be disclosed and data obtained will be solely used for the present study.

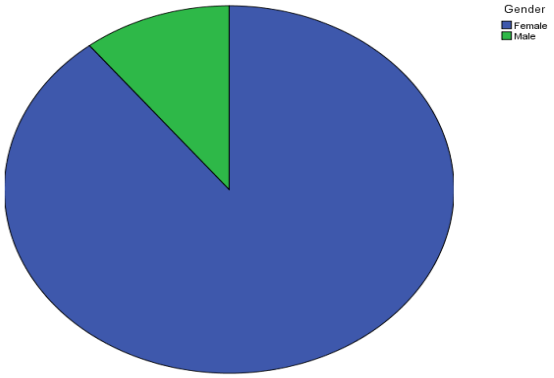

Fig. 1: A pie diagram showing Pharm. D students (male and female) participated in the present survey

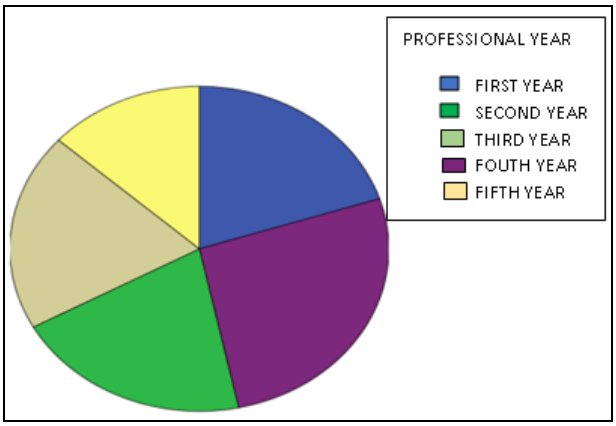

Fig. 2: A pie diagram showing distribution of Pharm. D students participated in the present survey.

RESULTS

A total of 296 questionnaires were filled by Pharm-D students. Response rate was thus 100%. This indicates that all students took great interest in this survey. Out of 296, ratio of form filling for first year students was 20%, second year; 20.6%, third year; 20%, fourth year; 26.3% and final year; 13.5% respectively. Thus first, second and third year students comprise 60% while fourth and fifth years constitute 40% of the present study.

Students perception towards learning tools

Perceptions of pharmacy students towards learning tools is presented in figure 3. Most of the students (53.3%) strongly agreed or agreed (40.8%) that introducing technology (computers, e-books, various software, etc.) will improve learning, while only few students (4.7%) both male and female showed a neutral response (χ^2= 495.03; P<0.05).

In response to second question asked (books are the most reliable way of getting required information); most of the students strongly agreed (53.04%) or agreed (37.5%) while only a few students (2.02%) disagreed or showed a neutral response (7.4%). Chi-square analysis detected a significant difference in obtained responses (χ^2=437.23; P<0.05).

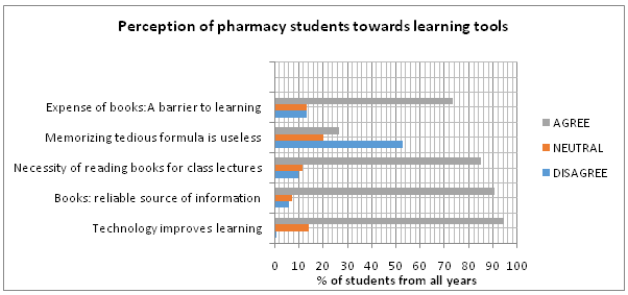

Fig. 3: Perception of pharmacy students towards learning tools

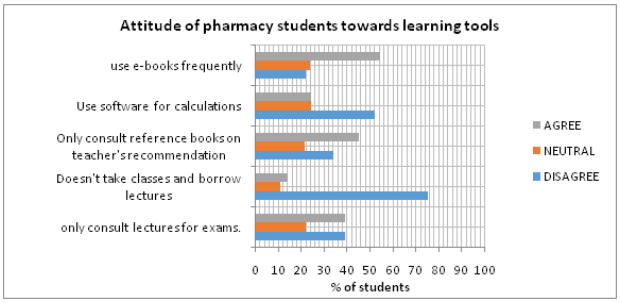

Fig. 4: Attitude of pharmacy students towards learning tools

Likewise first question, response for third question was also positive because when asked about reading books beside lectures is essential, more than 50% agreed or strongly agreed (33.1%) on this question while 2.7%; disagreed or neutral 11.4% (χ^2=360.36;P<0.05).

In response to question that when software do all calculations, than doing manual calculation is useless; 45.6% disagreed while 20.2% were neutral. Remaining students showed a mixed response; agreed (16.8%), strongly agreed (9.7%) and strongly disagreed (7.4%) respectively (χ^2=53.55; P<0.05).

Most of the students agreed (73.24%) that unavailability of books effects on their learning while other students either disagreed (13.02%) or showed a neutral response (13.1%) to this question (χ^2=212.88;P<0.05).

Students attitudes towards learning tools

Attitudes of pharmacy students towards learning tools is presented in figure 4. Most of the students disagreed (31%) or strongly disagreed (8.1%) that in examination they only study from lectures while other students either strongly agreed (15.8%); agreed (23%) or showed a neutral (22%) response to this question (χ^2=17.22; P<0.05).

Most of the students strongly disagreed (34.45%) that they do not take classes and use notes followed by those students who disagreed (40.8%), neutral (10.8%), agreed (8.4) or strongly agreed (5.4%) respectively (χ^2=48.21; P<0.05).

Another question related that students read books only when the teacher recommends it and lectures are sufficient for examination preparation, a mix response in attitudes were observed. All together 60% students either agreed (32.4%) or disagreed (30.4%) on this question followed by those who were neutral (21.2%), strongly agreed (12.5%) or strongly disagreed (3.37%) respectively (χ^2=24.85;P<0.05).

Related to software usage, most of the students either disagreed (43.9%) or strongly disagreed (8.1%) that they have used the software for statistical and pharmaceutical calculation. About 45% students; showed a neutral response (23.9%) followed by those who agreed (20.9%) or strongly agreed (3%) about using it (χ^2=46.54;P<0.05).

Most of the students agreed that they uses e-books (41.8%) for obtaining information followed by those students who either strongly agreed (12.5%), disagreed (16.8%) or strongly disagreed (3%) while surprisingly 23.6% showed a neutral response (χ^2=59.19; P<0.05).

DISCUSSION

The objective of the present work was to assess attitudes and perception of pharmacy students towards various learning tools such as lectures, computers, e-books, software etc and to analyze use of technology in present learning environment. A standard questionnaire was designed for the collection of data; interpretation was done on SPSS software.

Major finding of present study is that most of the Pakistani pharmacy students agreed that using technology will improve learning. This outcome was already expected. It indicates that student strongly realizes importance of technology in learning and it has a great influence in their usual learning process. Although research on technology-mediated learning has increased

in recent years, it still lags behind developments in practice (Alavi and Leidner, 2001). Oliver and Goerke found that Australian students have easy access to technology and suggested that use of technology in teaching will improve learning(Oliver and Goerke, 2007). Similarly, in the ECAR study of undergraduate students, it was found that most of the students have laptop, phones with access to internet and can efficiently use internet to get required information. However, students perceive that instructors need to use IT effectively in their course (Caruso and Salaway, 2007).

Our results also reflect that students recognize the significance of book-reading. Garland and Noyes found that attitude of students towards books and computers are similarly positive (Garland and Noyes, 2005). Likewise, Pharmacy students considered that reading books is essential for improving knowledge and proper understanding of subjects. Despite of the fact that classroom lectures are extracted from these books, it cannot be undermined that the expense of books make them inaccessible to every student or they may not have internet access to e-books of those reference/text books. Thus, it is imperative that appropriate number of books should be available at all time to cater student needs at the library/ bookshops. Students may also borrow books from their instructors, if not available in their libraries. It was concluded by Daniel and Woody that electronic textbooks are equivalent substitutes for traditional textbooks. (Daniel and Woody, 2013). Another study suggests that many students expressed appreciation for the online availability of the book as well as the low cost (Robinson and Sherry,2011). Pharmacy students also showed positive attitude towards use of e-books.

Students agreed that although software can perform all the required calculations, but learning formula and manual calculation is essential. This indicates that students acknowledge the importance of software but they also want to understand underlying formulas and calculation prior to software usage. This is encouraging as most of the students prefer to comprehend principles before using software. However, most of the students have not used pharmaceutical and statistical software in undergraduate courses or used only when needed.

A mixed response was obtained when students were asked about studying from lectures for examination, but students take classes and do not copy their friend's notes for exam. It appears students want to take lectures regularly before appearing in examination rather relaying on others.

Most of the students denied that study only from lectures for examinations. From this fact, we can deduce that whatever was taught in the class was thought to be sufficient for the preparation of examinations. In order to make students more book centered, it is the responsibility of instructors to recommend and emphasize on importance of books in their lectures and later take feedback from students.

In response to the question, that whether students are intent on attending classes rather than rely on handwritten class notes compiled by other students, the response was quite encouraging as most of students preferred classes rather than notes. It means students urge to completely understand concepts rather than rely on another student's lectures.

Briefly in the present survey, all the students actively participated in the present study. However, level of motivation and enthusiasm were more apparent in the first year students as compared to other students. But these students had variable views regarding the teaching patterns. Most of exhibited an inclination towards the conventional methods of teaching. This pattern might be due to their lack of exposure to various technological tools that makes teaching more effective. The fouth and final year students however, showed a positive response towards the use of e-books, smart phone graph calculator applications and various medical applications. Students are of the view, that all these technologies had greatly assisted them in grasping difficult concepts. The reason might be that as the Pharm.D course progresses, the students were taught with various teaching aids (for example; computer aided designing of drug molecules). Furthermore, the students were given e-books by teachers, which enhanced their views on the usefulness of this technology. Nevertheless, in the intermediate professional years (second and third years of study), an assorted response was obtained. This response might be as many of these students were already using e-books, but the use of other options might be less available for them.

Generally, students were rather motivated and open-minded towards the practical use of technology in assisting their learning patterns.

CONCLUSION

Through this study, it was concluded that introducing technology will enhance educational development of students. It helps them to cope with the challenges and problems in learning. Like use of e-books when traditional textbooks are not available. However, students also considered that learning formula and calculations is necessary, even though software can do similar calculations. Students also identified the significance of reading books.

Building of long-term competencies in students would be the prime objective of any educational system (Kang *et al*., 2010). Knowledge of students' preferences for various learning tools might help policy makers to develop the policies that can improve learning.

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