REVIEW OF COMPUTER-AIDED LEARNING SYSTEMS

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ABSTRACT

BACKGROUND
This work presents the review of computer-aided learning systems. These systems have been specially designed to assist best meet necessities and requirements that arise when learning is happening outside of a standard classroom setting. Computer-Aided Learning (CAL) systems provide support to the learners in the process of teaching and learning. Here, the use of learning systems in the field of distance learning has been presented. This work covers the work done earlier in the field and related problems and limitations.

KEYWORDS
Computer-Aided Learning, Learning Systems, Education, Teaching, Distance, Online, Learning.


BACKGROUND
The aim of this research work is to resolve the problems and limitations of computer-aided learning systems. Many learning systems have been developed for the purpose of providing support to distance learning. The learning support system is a package where many courses are provided for different users. These systems support learning of learners and make the process of learning easy and effective. The study of earlier developments illustrate that there are limitations and issues, which can be resolved for getting better results. Therefore, further research in the field is required to fulfill the purpose. The following are some findings, which are identified from earlier developments, so that further investigations can be made in related areas for improved outcomes.

Findings
It has been found in one of the research that the CAL systems developed lack in quality of the course. The research by Richardson and Price in 2003[1] states that the quality of the course plays an important role in the development of a learning system. The focus should be made in this aspect to improve the quality. One another research in this regard illustrates that the increasing number of e-Learning programs has sparked concerns about the quality of the instruction, Yang and Cornelius, 2005.[2] In order to attract new students and maintain existing ones, institutions need to ensure comparable quality between online and face-to-face offerings.[3] Therefore, the periodic revision, update and maintenance of online courses are becoming increasingly important. The direct and instantaneous verbal and non-verbal exchanges between teacher and students that are present in face-to-face learning situations[4] facilitate the continuous improvement process. This type of informal feedback is supported by the postcourse formal feedback typically gathered through course evaluation questionnaires.

This course evaluation process is the major process used by higher education institutions to seek feedback from stakeholders.[5] As part of content delivery teams, Instructional Design (ID) professionals are challenged with evolving with the field as well as assuring sound professional design practice to lead the e-Learning enterprise.[6] So, the quality of the course is one of the main aims of this work.

It has been observed in some of the studies that the role of online instructors is also important. One research by Higginson in 2000[7] in this regards highlights the issue of interaction. This research states that there is lack of interaction between student and tutor, which affects the teaching-learning process. It has also been found in another research that some institutions ignore the fact that beyond facilitators, online instructors are the ones who interact and communicate with students.[8] Through normal instructor-student interaction, instructors regardless of employment status are also recipients of other sources of course quality feedback-formal and informal-from students. Another research by Young and Norgard in 2006[9] also emphasises on the importance of online instructors. This work states that instructor’s role is important in supporting the online learning process. The importance of online instructors in online course quality has also been noticed in another research by Averinos and Anderson in 2007. This work states that instructors are the ones who deliver the course to the end-users making them the common link between the course, the students and the development team and thus ultimately the institution. One more work reveals that online instructors have the privilege to receive feedback from the learning process[10] and therefore have the potential to play a critical role in online course quality. In one another research, it has been noticed that the students suffer due to lack of tutor support[11] in distance learning. The improvement is required, so that better tutor support can provide better opportunities to a learner, which is also the aim here.

Some shortcomings are also noticed related to automated submission and assessment of work in one of the research by Brown and Race in 1999.[12] There were delays and proper arrangements have not been made. The same kind of problem has also been noticed in one another research by D. Morris in 2003.[13] The same issue is also noticed in another project, which is inadequate information about the grading of written...
assignments and it arose based on student comments and complaints. One more research by Rami Rashkovits and Ilana Lavy in 2011 also illustrated the same problem. The better results can be obtained by making better use of technology.

Also, it has been revealed from earlier work that the use of real-world problems provide a bridge between the instruction and student experiences, which in turn facilitates application of content. Since, the goal of learners will be to interpret and solve the problem, this problem-solving process will drive the learning and result in students learning the content as they apply it. The work by G-Famoso in 2005 illustrates that the problem-based learning makes the learners, the constructors of knowledge and ideas. One research in year 2008 by D. Halonen states that problem-based learning can enhance the learning process and make the students self-learners. One more research by Jeong H. and Hmelo-Silver, C. in 2010 also highlights the same issue. In one more research in 2011 by Finkle, the importance of problem-based learning is highlighted. So, by introducing real-world problems, the quality of learning can be improved, which is also the aim of this work.

Conventionally, learning systems tend to be course centered rather than student centered. It has been found that, at this time, a learning system does not accommodate a complete range of learning styles. One research in 2005 by M. Ally states that by introducing different students’ learning styles into a system, a better support can be provided to the students. One research highlights the same issue that the support to different learning styles can make the system robust. One another research by Holden in 2010 also states that a robust learning system should support different learning styles so that learners can learn in their own learning styles. So, it is also a big challenge, which is also taken into consideration in this research work.

The review also states that some trainers have weak computer and information literacy skills and lack the information management skills needed to successfully use a learning system to support their teaching. This kind of problem has been found in a research by Dwyer and Dwyer in 2003 which states that many teachers are challenged to design and organise a mixture of learning activities, which are appropriate to the needs of the student, teaching skills and teaching styles. One more research by Samsonov and Beard in 2005 in this regard highlights that teaching staff in this situation must not only learn how to operate within these environments, but also develop a critical perspective of their use of the system in teaching in a variety of modes. So, emphasis should also be made in this regard as well.

**CONCLUSION**

The review of literature reveals that distance learning is a field, which suffers from various problems and limitations due to the lack of facilities and support. So, the study of previous researches describes that there is need to overcome the issues and to fulfill the purpose further investigations into the related fields are required. Computer-aided learning systems support learning of learners at distance and make learners to learn in an effective manner. This field provides many areas of research, so that further development can be made in the field.

**REFERENCES**

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