

instruments, such as items difficulty (P), items discrimination (r), items reliability (r_{tt}) and efficiency criteria of learning packages (E_1/E_2) 80/80 standard criterion.

Results or Conclusion

The research finding were as follows :

1) The total data analysis in present status was at the "middle" level and trend of a ubiquitous instructional system on 9 steps was at the "high" level , and total indicator was significant at 0.01 level.

2) The five ubiquitous instructional packages were efficiency based on 80/80 efficiency criterion.

3) The post-test learning achievement of ubiquitous learning packages was significantly higher than the pre-test learning achievement at 0.01 level.

4) The result of self-assessment from using the instructional packages via network was the "high" level and the sample ideas and opinions about a ubiquitous learning could be concluded that a ubiquitous learning system was a new paradigm and innovative for a learning society to enhance the efficiency and effectiveness of schooling in upper secondary education level.

Discussion

The research and development of a ubiquitous instructional system for upper secondary students in Upper Northern Thailand is the important topic and issue for discussion as follows :

1. The designing and developing of a ubiquitous instructional system were divided into 9 steps. The research conceptual framework was based on theories and practices of the system approach. The results of the research methods on 9 steps in the

ubiquitous learning framework showed that, total indicator of present status in the implementing was on the "middle" level, and the indicator in trend of implementing was on the "high" level. All steps indicators were significantly different in 0.01 level. Thus it can be summarized that the system approach is very important for the instructional system. Tavigulasub (2011) implied that the system approaches is the most important aspect for the implementing, problem solving, communicating, assuring quality, evaluating, controlling and checking. It is a good strategy for innovative construction and forecasting the new paradigm in education.

2. The details of this in-depth study from analyzing of the contents, trying-out the research instruments and personnel ideas and opinion techniques found that, the ubiquitous instructional system in this research would be appropriate for application in learning with the different contexts in the new educational era which would likely depended on using technology-based paradigm by emphasizing on the learner-center approach. A new paradigm helps the learners make their good character on self-managing skills and integrating the curriculum by linking over their experience with the technology (Branson,1990). Nowadays, people who lives with educational technology have the best chance to integrated skills in various learning method such as e-learning, networked learning, online learning, open learning, distributed learning, virtual education, digital media and technology for learning, technology enhanced learners in instruction, especially the conceptualizing in research, references and construction contents (Loveless, 2013). So the ubiquitous learning is an innovative learning by using technologies in difference contexts in modern society.

3. BEDUL Model, a ubiquitous instructional system which was designed and developed which is the advantage for the learners and based on the principles and theories of the system approach is responsive innovation in educational objectives in the new paradigm and the different context on the anywhere and anytime learning situation. The current issue in transformative learning will change the learning paradigm in the 21st century, especially the computer networks revolution in the digital age. In the learning society, the ubiquitous instructional system will appear anywhere and anytime. Bitter and Legacy (2009) said that, the functions of high competency in ubiquitous computer era were the communication, data transformation and information linkage anywhere and anytime. This phenomenon is the influence of the ubiquitous computing and technology. So the ubiquitous computing and networks provided high competency and capability on connectivism for human learning and instruction in the present world pedagogy.

Recommendation

1. Recommendations for the implementation

1.1) This studying in the systematic approach of a ubiquitous instructional system was designed and developed in relation to the Basic Education Curriculum Act 2008. The pedagogy emphasized the analysis, synthesis, design, trial and improvement . A ubiquitous model should be applied for the learning and instruction for the learners or subjects in any levels or any context of learning environment.

1.2) A ubiquitous instructional system is an educational innovative pedagogy of the instructional technology in the new age. It is a

responsive and reflexive model related to the educational reform strategies. Brahmawong (2012) said that the ubiquitous education is the new instruction which has role on the Education Act 1999 in section 66 which refer to the learners development in compatibility of the new innovation by using knowledge management for themselves. Three learning methodologies are self-direct learning (SDL), peer-direct learning (PDL) and teacher-direct learning (TDL).

1.3) The BEDUL Model is a new instructional system based on the principles and theories of the system approach. This model and pedagogy can be used and apply for any learning activities in upper secondary students level and other levels in any places and any contexts. Moreover, this model should be use for the tele-training in the syllabus or curriculum of training, too.

2. Recommendations for the further research

The researcher has some recommendations as follows :

2.1) There should be studies on designing a ubiquitous instructional system for learning or educating in another level.

2.2) There should be a study and trial for the learner groups in a different context.

2.3) There should be studies about in-dept detailing on variable factors that reflect designing and developing in a ubiquitous instructional system in any level.



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