Focus Group Discussion in Developing Tanzania Secondary Schools e-Learning (TanSSe-L) System

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ABSTRACT

The knowledge on how ICT and its application can improve the social and economic lives of people generally is very limited in many communities of developing countries, Tanzania being among them. Although many people may have and be in contact with computers, does not mean that they really understand the impact that ICT if used effectively could have on improving performance. Developing computer systems for people to use, if lack of knowledge is not carefully considered, the motivation to use the system may be very minimal or completely absent. The emphasis on participatory action research methodology is that the introduction of technology into organizations accompanies learning and generates a specific form of knowledge.

Finding appropriate system requirements depends on how close the developer is to the system users or stakeholders. Focus group discussion as inspired by the qualitative and participatory action research methodologies is the key to being close to users. This paper presents how focus group discussion was employed during developing Tanzania Secondary Schools e-Learning (TanSSe-L) system, specifically during requirement specification and analysis phase. It shows the importance of involving users while developing contextual information systems for a specific purpose. It also shows how secondary school stakeholders were made closer to the process of TanSSe-l System development, together with users’ response to reveal real problems in Tanzania education system.


1. INTRODUCTION

Tanzanian secondary schools that are predominantly located in rural areas are disinsent to excellent teachers to work there compared to working in urban areas. ICT for e-learning for Tanzanian secondary schools was the research project conceived at the College of Engineering and Technology, Department of Electrical and Computer Systems of the University of Dar es Salaam (UDSM) aimed in developing a tool to enable ICT support with teaching and learning material, facilitating self learning and information sharing to rural secondary schools. ICT for e-learning research project was depicted on three basic pillars as shown in Figure 1. These are “establishment of suitable and effective connectivity and configuration”, “development of a context centred platform which includes an e-learning management system using open source software” and “development of learning content materials for self-learning and sharing”.

Fig. 1: Three Basic Pillars for the ICT for e-Learning Project

The research project focused on employing hybrid mode of delivering teaching and learning materials to secondary school teachers and students, which includes the use of a learning management system (LMS), CD-ROMS and face-to-face. The LMS, which were latter on named as TanSSe-L system was developed to accomplish hybrid mode of delivery, starting with two pilot schools Wali-ul-Asr Girls’ Seminary and Kibaha Secondary School in Kibaha. TanSSe-L system was developed based on the Tanzanian secondary schools’ context; hence the approach in getting context specific was through involving Tanzania secondary schools users through focus group discussion as it is being motivated by participatory action research (PAR) methodology.

The rest of this paper is organized as follows. Section two briefly gives the importance of focus group discussion in the development of the TanSSe-L system. Section three shows
techniques used to be closer to users. Section four elaborates on how participatory action research methodology was organized in the whole issue of finding TanSSe-L system requirement specifications with Tanzanian secondary school users and it also gives the outcome of the focus group discussion. Section five briefly explains how discussion outcome was used in identifying TanSSe-L system requirements. Section six is the concluding remarks.

2. IMPORTANCE OF FOCUS GROUP DISCUSSION

The importance of considering users in developing computer systems has been recognized since the year 1970s [1]. Hirschheim et al. [6] and Jeremy [7] state that systems development encompasses the complete range of activities involved in the process of analyzing, designing, implementing and maintaining an information system. It is here taken as obvious that analysis and design cannot be separated from users’ social contexts for the purpose of study, and that all social factors that impinge on development are worthy of study, with appropriate research methods. Jeremy [7] and Lyytinen [13] add by saying that systems development should be taken to be a ‘multidimensional social change’. The need for an analytical model for work-oriented information system research and practice comes from the requirement that people doing their everyday tasks and duties should have an opportunity to make an impact on the prospective information systems. Information systems should be developed in their organizational context.

O’Brien [15] states that participatory action research or sometimes known as participatory research is “learning by doing”. That is, a group of people identify a problem, do something to resolve it, scrutinize their efforts and if not satisfied, try it again. In the Nordic countries the “Scandinavian model” was introduced in the middle of the 80s [3], introducing a participatory approach involving users for context sensitive and robust IT system solutions. Coming closer to a sub Sahara African context the participatory action research conducted in the presented project is more likely linked to participatory rural appraisal (PRA) introduced by Chambers [2] and Rydhagen [17].

The knowledge on how ICT and its application can improve social and economical lives of people generally was not very much known to many of the Tanzanians [9] and [10]). Although, Tanzanian secondary schools may have been in contact with computers, it doesn’t mean that they really understand the impact of ICT if effectively used towards improving performance. Coming to the issue of developing TanSSe-L system for their use, if lack of knowledge is not carefully considered, the utilization motivation of the TanSSe-L system as part of hybrid mode of learning material delivery, may be very minimum or completely ignored. The emphasis of participatory action research methodology is to be a methodology which accompanies the introduction of technology into organizations and learning. Participatory action research methodology as mentioned by Rowley [16] represents a specific form of knowledge generation. Thus, with participatory action research methodology, through focus group discussion the understanding of the importance and use of TanSSe-L system was possible and hence increased assurance towards its utilization.

3. STRATEGIES EMPLOYED TO BE CLOSER TO USERS

To develop a functional system as per the context of a certain organization depends much on how end users are involved during the whole process of development. Finding appropriate system requirements depends on how close the developer is to the system stakeholders [10]. Qualitative researchers believe that they can get closer to the actor’s perspective through detailed interviewing and observation as emphasized to be the techniques adopted by participatory action research methodology [14]. For the success of the development of TanSSe-L system, it was very important to be close to end users because they are the ones, who to a big extent know what the deficits are in their education system and what they really need to improve in their performance.

(a) Development of Students’ Registration Database System

To create closeness environment to TanSSe-L system users, the process started with a small project which was relevant for Tanzanian secondary schools’ daily activities. There were many ICT application activities needed by Tanzanian secondary schools to ensure easy and comfortable daily administrative operations apart from ICT use academically. One area which is being implemented almost manually by many secondary schools is in keeping records for registered students. In order to enable the schools start utilizing the ICT facilities effectively, the project decided also to develop a students’ registration database system. Development of students’ registration database was for Wali-ul-Asr Girls’ Seminary. The database can suit any Tanzanian secondary school, subject to slight modifications as per individual school’s requirements. Students’ registration database was intended to facilitate easy data record keeping of the registered students as per Wali-ul-Asr context. It was also intended to build good relationship and sense of trust between the UDSM and Wali-ul-Asr Girls’ Seminary. Students’ registration database system was the starting point to be close to stakeholders of the TanSSe-L system [10].

(b) Context of Application in Triple Helix Model and Mode 2 Approach

TanSSe-L was a context-driven research work on a specific problem. Triple helix processes and Mode 2 methods of knowledge production in the specific context of its application and implication was adopted. Gibbons et al. [5] exploit the major changes in the way knowledge is being produced in science and technology, the social sciences and humanities, but mainly in science and technology. Comparing the traditional way of doing research by academia, which Gibbons et al. [5] call “mode 1” and where knowledge is generated within the context of a discipline and cognition, Mode 2 knowledge is created in a broader, trans-disciplinary social and economic context. That is, it is a form of knowledge production, which is context-driven, problem focused and inter-disciplinary. “Context-driven” means research carried out in the context of application, arising from the very work of problem solving and not governed by the paradigms of traditional disciplines of knowledge.

Trans-disciplinary work is a form of learning and problem-solving activity involving co-operation among different parts of society and academia in order to meet the complex challenges of society [12]. In trans-disciplinary research, researchers work jointly to develop a shared conceptual framework and methodological approach that integrates and goes beyond their respective disciplinary perspectives to address a common problem. Therefore, the research cuts across, between and beyond disciplines. In the product-based economy, development
was driven by industry. This is not possible in the current knowledge-based economy. Future development in the knowledge economy is driven by incremental innovation within industry. Innovation can be achieved as a result of an alliance between government, industry and academia. This is a triple helix alliance. The purpose of the triple helix is to stimulate knowledge-based economic development, drawing on the resources of all three members of the helix [12].

For TanSSe-L system development, three entities in a triple helix form, worked very closely, namely concerning Ministry of Education and Vocational Training (MoEVT), researchers of higher learning institutions (University of Dar es Salaam and Blekinge Institute of Technology (BTH) in Sweden) and stakeholders from selected Tanzania secondary schools. The research brought together academia, Government and communities to solve a specific problem.

4. ORGANIZATION OF FOCUS GROUP DISCUSSION AND THE OUTCOME

Development of the TanSSe-L system was mainly based on qualitative research methods where qualitative data were obtained from observation (field-work), in-depth interviews and focus group discussions. There are various qualitative research methods, and the choice of which one to employ is influenced by the way the researcher collects data. In TanSSe-L system development, all the above-mentioned qualitative means of data collection were employed to get primary sources of data, but the emphasis was more on focus group discussion. The means of data collection are also presented by Kalinga et al. [8].

Focus group discussion is a widely used research method that involves bringing people together for in-depth discussions of issues of interest [4]. The information provided by a group discussion is usually richer, more complete, and more revealing than that which can be obtained through questionnaires. In focus group discussion, the researcher brings together a small number of subjects to discuss the topic of interest. The group size is kept deliberately small, so that its members do not feel intimidated but can express opinions freely. A topic guide to aid discussion is usually prepared beforehand and the researcher usually ‘chairs’ the group, to ensure that a range of aspects of the topic is explored. The discussion is frequently tape-recorded, then transcribed and analyzed [4].

Fourteen areas from Tanzania regions and districts were surveyed. At least three to six schools were visited and surveyed in each area. These areas included: Bagamoyo, Iringa, Kibaha, Kilwa, Mkuranga, Moshi, Morogoro, Mwanga, Arumeru, Same, Songea, Mbeya, Dodoma and Arusha. Furthermore, educational institutions were also visited to find the documented issues concerning Tanzania secondary schools. These institutions include MoEVT and the NECTA, a semi-autonomous agency of the MoEVT [10] [11].

For TanSSe-L system development, focus group discussion was guided by open-ended questions. The focus groups were organized to smaller sub-groups as follows: with students alone, with teachers alone, with school administrators, joint discussion with students and teachers, with research group members, and with MoEVT officers. Open-ended questionnaires were designed to get needed information like:

- Status of books and reference materials availability
- Adequacy on teaching staff and how they solve the problem if not adequate
- What are the subjects with critical shortage of teaching staff?
- Availability of computers and their usage if available

General comments obtained through focus group discussion on the problems facing Tanzanian secondary schools, leading to poor performance, included:

- Lack/inadequacy of resources (text and reference books, laboratory equipment)
- Lack/inadequacy of qualified teachers
- Lack of discipline in both students and teachers
- Lack of preparation and commitment to fulfill the objectives of lesson plans, due to demoralization of teachers

Below are some of the problems discussed and how administrators, teachers and students are taking an initiative to counter them.

(a) Inadequacy of text and reference books

To counter this problem, teachers normally prepare detailed notes for students to read, while the few books available are shared among students during the lesson. Some schools borrow books from neighbouring schools. Parents are sometimes asked to purchase books for their children. Students and teachers are also encouraged to use public (regional/District) libraries for reference books.

(b) Inadequate number of teachers

The inadequate number of qualified teachers is a big problem for many Tanzanian secondary schools. However Headmistresses/Headmasters reduce this problem by sometimes:

- Recruiting temporary teachers, especially Form VI students who are on leave
- Borrowing/exchanging qualified teachers from/with neighbouring schools
- Using part-time teachers
- By asking teachers to teach in extra time and at weekends, using the lecture method to combine students studying the same topic from different classes

(c) Subjects with shortage of teaching staff

Depending on the school, the following subjects were identified to be severely lacking teaching staff; Chemistry, Physics, Biology, and Mathematics (Science subjects and mathematics), followed by Economics and Commercial subjects (Book-Keeping and Commerce).

(d) Ensuring that the school is performing well

Apart from the many problems facing Tanzania secondary schools, each school is struggling hard to make sure that students are performing well. Strategies taken by administrators (Headmistresses/Headmasters) include:

- Close supervision to ensure that teachers fully cover the curriculum, if possible well in advance, so that students can have more time for revision before examinations;
- Making sure that all periods are taught and involving teachers in serious and efficient teaching, that is motivating teachers to efficiently fulfill their responsibilities;
- Closely following up on the attendance of teachers and students in class and motivating students in self-learning after classes;
- Rewarding students who perform well and giving incentives to teachers who are doing well; staff meetings to discuss the problems of students and how to handle them; and
Teachers on the other hand play an important role in ensuring good performance through: giving students enough exercisers, more tests and correcting the work done to clarify areas that students got wrong; preparing lessons in order to teach and teach well; adhering to school rules and regulations, while maintaining class discipline; and working hard and using student-centered teaching techniques. Some teachers assign tasks using participatory methods, creating subject clubs and teaching in a participatory manner. Sometimes they get students to orally present what they have learned and understood, they keep students busy in finding materials by themselves under their guidance, and involve parents in school activities. Weak students need more attention to make sure they improve their performance. Techniques used by teachers to help weak students include conducting remedial classes in the evening after normal classes and on Saturdays, providing more exercises, assignments and homework in order to keep students busy, and focusing more on academic issues. Other techniques are through:

- Counselling and talking to weak students individually, having a discussion with the parents concerned on how to assist them
- Creating small group discussions on the subject, with a mix of weak and active students
- Encouragement, close supervision and praising them when they improve
- Emphasizing the need to attend classes and to do private study

Some schools have double teaching sessions due to many students. In this case there is no time for extra classes on weekdays. Weak students are helped during the weekend, mainly on Saturdays. Some teachers do not manage to give extra teaching due to the heavy load they bear.

The importance of using ICT in education has not been understood by many people, specifically secondary school administrators, teachers and students. Discussion on this area showed difference understanding, with the ideas of students and teachers being presented separately, as shown Table 1. These ideas show that many of them have positive thoughts on ICT use in education. However there are few with negative thought of it as shown in Table 1.

Focus group discussion with the MOEVT showed that the Government through the MoEVT is promoting a collaborative way of learning in Tanzanian secondary schools. Collaborative learning discourages individualized reading and a single final examination, but rather encourages multiple interactions leading a common and negotiated understanding, combining the differences in ideas, knowledge and attitudes of the participants [11].

5. FOCUS GROUP DISCUSSION OUTCOME IN TanSSe-L SYSTEM DEVELOPMENT

One important general observation through focus group discussion is the e-readiness in mind set to the society in technological change. As summarized in Table 2, it was realized that people have positive thinking in the use of ICT in education in terms of raising education standards, showing education is improving, getting a number of global issues, using modern technology in learning and teaching.

Not all requirements can be covered by information systems, things like inadequacy of qualified teaching staff and behaviour of learners in not being seriously engaging themselves in learning. When analyzing students’ and teachers’ views closely, summarized in Table 2, the following two issues were found to be the ones most needed by majority of them, which were the two basic requirements for TanSSe-L system developed [10] [11].

- The need to have more self-learning materials especially in mathematics and science subjects
- The need to have a good number of exercises, and self-test questions for practice

This led to having the following identifying TanSSe-L system component: “learning material”, “assessment activities”, “communication recourses” and “user”.

6. CONCLUSION

The significance of focus group discussion as advocated by participatory action research methodology is crucial, not only in social and medical sciences, but even in information systems development. Focus group discussion is a way of exchanging knowledge, that is, users giving their experience of using the system they are in and researchers giving new suggestions and techniques to improve that system. Knowing how the power of ICT can be used effectively to improve social lives in the two pilot schools created a noticeable interest in the technological changes they are employing now.

Fear of change from the traditional way of doing things to the modern way is in many people. School teachers at first showed their true feelings about the fear of losing their jobs, thinking that they will not be needed when ICT applications in education are introduced. This was noticed when saying “learners need the physical appearance of teachers in order to ask questions”. The emphasis of participatory action research is that it is a methodology which accompanies the introduction of technology into organizations and learning. Through focus group discussion and demonstrations, a common understanding of how TanSSe-L could complement traditional teaching was arrived at. The fear of losing control in the classroom or even employment was reduced during these discussions. The students’ registration database developed for Wali-ul-Asr Girls’ Seminary, as briefly indicated in section III, created a good relationship and trust between the researchers and school staff.

Participatory action research methodology in addition has
strength in promoting a context of application approach in doing research work on specific problem in the real word, arising from the very work of problem solving by involving users.

Table 1: Students and Teachers respondent During Focus Group Discussion

<table>
<thead>
<tr>
<th>Description</th>
<th>Students’ Views</th>
<th>Teachers’/Administrators’ Views</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Material</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somebody gets learning materials for reference and it facilitates easy teaching by getting information from various sources, and with a wide choice of references.</td>
<td>✓ As a source of educational materials, and is a good source of teaching and learning material if used properly.</td>
<td>✓ Special programs for teachers should be provided especially for older ones</td>
</tr>
<tr>
<td>ICT use in education is more than a book for getting learning materials; it encourages the use of various materials which are relevant and not only local materials.</td>
<td>✓ Can be compared to the use of a library.</td>
<td>✓ Prospective users need to be trained; seminars for teachers concerning ICT need to be provided</td>
</tr>
<tr>
<td>ICT use in education can be used as reference books, for searching the relevant subject material and storing for future use.</td>
<td>✓ It facilitates access to learning materials.</td>
<td>✓ It is good, but should be accessed by all students to avoid educational discrimination</td>
</tr>
<tr>
<td><strong>Management of Time</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People can do many things in a short time by employing ICT in education;</td>
<td>✓ Students can easily learn things from resources which might be difficult to get;</td>
<td>✓ Both teachers and students should be prepared well in ICT use, manuals on the use of ICT in education should be translated into Swahili for ease of understanding especially by students</td>
</tr>
<tr>
<td>It speeds up learning; enables teachers to teach many streams for a specific/same time;</td>
<td>ICT use in education is crucial and it is easy to get updated teaching materials</td>
<td>✓ It must be protected for people especially youth because some students usually open things which are not good, e.g. sex images, videos and other local sites showing sexual activities. Students should be prevented from viewing these things.</td>
</tr>
<tr>
<td>It saves time and enables people to get a lot of information rather than from books and notes;</td>
<td>It is very important, but in our country there are several problems on the students’ side, because the understanding ability of learners needs the physical appearance of teachers in order to ask questions.</td>
<td>✓ It should be 40% of the education programme, the remainder should be used devoted to face-to-face teaching and learning activities</td>
</tr>
<tr>
<td>It helps teachers to simplify the work instead of using chalk.</td>
<td>ICT use in education fosters the desire for education is improving and through this the country will get educated leaders</td>
<td>ICT should be used from primary to University level; it must be used in all secondary/primary/colleges in the country and not only in the fortunate schools as is being done now</td>
</tr>
<tr>
<td><strong>Other Positive Comments</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting entertainment, playing games; it is a good attraction</td>
<td>ICT use in education shows education is improving and through this the country will get educated leaders</td>
<td>Lower charges should be made for Internet so that schools can manage, and employ active service providers</td>
</tr>
<tr>
<td>Important in raising education standards in schools and even in the country; both primary and secondary schools should be encouraged to use ICT in education, and computer training should be introduced, especially in Government schools</td>
<td>The use of computers in education should be stimulated and include a computer subject in Government primary and secondary schools</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
</tr>
<tr>
<td>ICT use in education shows education is improving and through this the country will get educated leaders</td>
<td>It gives an understanding of a number of global issues which are essential in studies</td>
<td>As a source of educational materials, and is a good source of teaching and learning material if used properly.</td>
</tr>
<tr>
<td>The use of computers in education should be stimulated and include a computer subject in Government primary and secondary schools</td>
<td>ICT use in education enables teachers to simplify the teaching process</td>
<td>✓ Can be compared to the use of a library.</td>
</tr>
<tr>
<td>It gives an understanding of a number of global issues which are essential in studies</td>
<td>ICT use in education can help to know about computers better and increase the understanding of students and teachers</td>
<td>ICT use in education should be taught by skilled teachers and experts</td>
</tr>
<tr>
<td>Learners get to expand their knowledge and needed information using ICT in education</td>
<td>ICT use in education should be taught by skilled teachers and experts</td>
<td>ICT use in education fosters the desire for education is improving and through this the country will get educated leaders</td>
</tr>
<tr>
<td>Provides modern technology and a wide range of information and technological development</td>
<td>ICT use in education can help to know about computers better and increase the understanding of students and teachers</td>
<td>ICT should be used from primary to University level; it must be used in all secondary/primary/colleges in the country and not only in the fortunate schools as is being done now</td>
</tr>
<tr>
<td>Provides schools with a modern way of teaching e.g. using computers and projectors to simplify the teaching process</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
<td>Lower charges should be made for Internet so that schools can manage, and employ active service providers</td>
</tr>
<tr>
<td>ICT use in education can help to know about computers better and increase the understanding of students and teachers</td>
<td>ICT use in education should be taught by skilled teachers and experts</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
</tr>
<tr>
<td>ICT use in education should be taught by skilled teachers and experts</td>
<td>ICT use in education fosters the desire for education is improving and through this the country will get educated leaders</td>
<td>ICT should be used from primary to University level; it must be used in all secondary/primary/colleges in the country and not only in the fortunate schools as is being done now</td>
</tr>
<tr>
<td>ICT use in education needs less teachers</td>
<td>ICT use in education should be taught by skilled teachers and experts</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
</tr>
<tr>
<td>ICT use in education is very good but there are no computers in schools, it is a new system</td>
<td>ICT use in education should be taught by skilled teachers and experts</td>
<td>ICT should be used from primary to University level; it must be used in all secondary/primary/colleges in the country and not only in the fortunate schools as is being done now</td>
</tr>
<tr>
<td><strong>Negative comments</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not advised because it makes students play games instead of listening to their teachers</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
<td>✓ NO, I totally disagree with use of ICT in education for Tanzania secondary schools (no reason)</td>
</tr>
<tr>
<td>Wise use of ICT should be taught and encouraged to avoid immoral watching of spicy (pornographic) firms</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
<td>✓ No idea about computers</td>
</tr>
<tr>
<td>I don’t think at this level (secondary school level) computers can facilitate my learning because I disagree with the method of using ICT</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
<td>✓ It is very important, but in our country there are several problems on the students’ side, because the understanding ability of learners needs the physical appearance of teachers in order to ask questions.</td>
</tr>
<tr>
<td>ICT may be used at diploma and university level but not at O-level and A-level because it could cause students’ brain to stagnate</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
<td>✓ Nothing good, it will destroy the African culture to some extent</td>
</tr>
<tr>
<td>ICT use in education at A-level should be taught as a subject, but at primary and O-level it must be prohibited since it will</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
<td>ICT use in education fosters the desire for education in most students and teachers; it helps to keep users up to date and makes teachers aware of the current issues in the world</td>
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</tbody>
</table>
7. REFERENCES


