

Describing proof on hybrid model of ICT and collaborative learning

Nityashree Nadar^{1*}, Dr. R. Kamatchi²

¹Bharathiar University, Coimbatore, India

²Amity School of Engineering and Technology, Panvel, Navi Mumbai, India,

*Corresponding author E-mail: nityashreenadar@yahoo.co.in

Abstract

This paper analysis document to explore tendencies of implementing of ICT in social media and collaborative learning which was explained in the previous paper with an experiment using the study of algebra data set. After analysing the hybrid model, this paper explains the analysis of that novel approach has another remarkable role as a developer and source of innovation. A proposed model that has been suggested to form a starting point for the next ICT education.

Keywords: Social Media; Information and Communication Technology; Collaborative Learning.

1. Introduction

The beginning of the 21st Century, the impact of introducing information and communication technology (ICT) in society has been perceived by governments as important parts of ensuring prosperity, knowledge and economic growth. As such, ICT education became an important focus, as a way of speeding up the process of fostering knowledge and assuring that future specialist are capable to continue and improve the knowledge required to improve technological progress [2-3]. All Worlds-countries started important campaigns of implementing ICT education in their national education systems. In particular, India has seen important changes in its ICT curriculum. Being considered a first world country with a high level of human development, India has an interesting reform framework, as the country has a large area and very diverse populations, and, in various contexts, the content taught might vary dramatically in complexities, difficulty, and themes [4]. The governments sustained efforts to implement in all schools important technological updates so that they have a large degree of technological devices and a very sustainable internet infrastructure. In addition, introducing programing classes in pre-university curriculum had become important in India [5]. This research has several goals. The first goal is to analyze the content of the ICT curricula in both states and shows curricular similarities and differences between these two educational systems. The second goal is to understand policies and the way ICT policies are structured for teachers and students. Third, this study intends to understand the ways in which ICT is treated as a passive use of technology or as a way of learning programming and software design.

2. Methods

This research uses qualitative research methods in order to perform document analysis [9], in order to understand and explore in details the ICT with respect to social media and collaborative

learning model which was proposed in paper [1] in Indian schools. For many researchers [e.g. 10-11], document analysis is a valuable practice consisting in finding, appraising, synthesizing and making sense of informational and contextual content presented in these documents as social artifacts. This method can be used together with other techniques but can be used as well as a stand-alone technique of qualitative analysis.

3. Findings

The model which was proposed in paper [1] speaks out the importance of social media and Collaborative learning .the model comes out with an experiment of decision tree saying that it is good for learning the high school maths which was preformed using the data set. Next it is gone for the study which is related to the proposed in the previous years which was being a global phenomenon yet developed by various countries with different economic, cultural and social views, the ICT education has being implemented in various ways and perspectives [6-7]. Even the basic notions and key terms are different in different states from India [8]. In India, the ICT syllabus has different terms in New South Wales and Victoria states and we focus this discussion in only these two states as they contain the largest population in India. While it is well known that India allows state a large degree of differences in education, this is strongly emphasized with the ICT curriculum content and policies. For instance, it was found that the Victoria state curriculum recently started to implement in 2017 a new curriculum for K to year 10 called Digital Technologies [8]. It has three important roles: to help students understand applying social, and the role of digital devices, to use digital technologies such as mathematics in other areas, and to initiate students in coding. In order to use ICT in other areas of learning and knowledge, ICT capabilities are structured as: a) investigating with ICT, b) creating with ICT and c) communicating with ICT. In India, the curriculum development remains behind..There is still the old ICT curriculum in place, as the national changes implemented in Victoria we do not find them in India. In this state, the ICT curricu-

lum is taught in primary level included in the science syllabus (as Science and Technology) [7]. In secondary schools, ICT curriculum is introduced from year 7 to year 10 as Information and Software Technology (IST) and in the last two years in introduces Software Design and Development 8(SDD) and Information Processing and Technology (IPT) for years 11 and 12 [7]. Another important aspect is that in all states the ICT curricula provide recommendations and policies for teaching for diverse ethical population or for students that have other primary language than English background. As well, it contains developing and acting ICT capabilities in order to provide: a) understand intellectual property; b) understand the impact if ICT in education; and c) understand and apply security practices and protocols. As well, we notice that the new curricula have different emphasis between general ICT literacy and the use of programming. For instance, while the previous curricula emphasized the use of technology in various areas of learning to nurture the discovery of new knowledge, the new curricula emphasize the learning of programming (coding). The curriculum let the teachers to implement in a flexible way the language available for them. The Indian curriculum spend considerable time on the process. Differently, the new Indian curriculum in Victoria explicitly emphasizes the use of debugging and testing for the purpose of improving and speeding up the process of designing software.

4. Research on deployment of ICT education to the current experimental development for proposed system in paper [1]

With the current study we continue a series of studies carried out about the proposed model and aim at answering to the following research questions concerning the proposed model:

- 1) Should the ICT education be organized / integrated to the existing proposed model?
- 2) How would the local ICT organizations like to participate in the planning and / or deployment of upcoming ICT Education?
- 3) How could the model in ICT education help the ICT companies find a solution to their recruitment challenges?

A. Research methodology, data collection, and analysis

The research framework for investigating all the development activities concerning the proposed model has been action research [9, 10]. During 2016 – 2017, there have been several mini-cycles where designed development activities have been done in different parts of the proposed model and the team entrepreneurs described in the article have been an active part of many of these development activities. The outcome of these development activities has been followed by participative observation. The team coaches are active agents for change when they act with student team entrepreneurs. Afterwards the field notes that have been made have been valuable qualitative data which has been reflected and analyzed with other researchers. Furthermore, also two team coaches have been involved to sense making process of how the current proposed model could be utilized in deployment of the ICT education. Methodologically, this article is a partly descriptive and partly explorative case study [11], [12]. It presents the current Deployment of the proposed model, explores its possible development paths, and finally describes how ICT Bachelor education could be integrated into it.

The basic assumption of the authors is that every research is value-laden and biased. By choosing to use qualitative methods for inquiry, the authors have at the same time committed themselves to continuous reflection of their own values and how they affect the research. At this study, the objective has been the further development of the current and integration of the upcoming ICT Bachelor education into it somehow. Therefore, there is an inbuilt bias in the observations and interventions made. The data analyzed for this study will help a) a project deployed for designing curriculum for “Digi” Bachelors of Business Administration to organize its actions b) further development and strengthening of the pro-

posed model c) act as input for the further studies on the topic. The results of the study have been discussed with three team coaches and two researchers. This has helped to test inner validation of the observations made based on the interviews.

The data for the article consists of qualitative interview material (12 specialist interviews with open-ended questions, notes on direct and participative observations, 10+ steering group meetings, researcher workshops, other workshops and meetings) and several unofficial discussions with colleagues and administrative staff and elsewhere where authors have been actively involved in development activities. Multiple sources of data and close cooperation between two authors made it possible to utilize both investigator triangulation and data triangulation [13]. The data was analyzed with principles of grounded theory [14-15]. The grounded theory analysis includes 3 main phases, open coding, axial coding, and selective coding [14] and the method requires the researcher theoretical sensitivity [16]. The researcher cannot force the data, but instead s/he has to let the data “speak”. Naturally, this phase is extremely hard in cases where interviewees have lots of pre-existing knowledge about the subject studied. It can be made easier by asking same open ended questions about the subject studied from all the interviewees and carefully listening and reporting their expressions.

In the open coding phase, interesting phenomena in the data are marked or highlighted. In this study, the interview notes were first gathered into one text file and then analyzed by two researchers. In the axial coding phase the interesting phenomena marked in the open coding phase are grouped and their relations (causal and other) are analysed. In the selective coding phase a lot of data is abandoned, the core of the results “what is going on here?” is taken and research reports are written.

As mentioned above, the grounded theory, analysis lets the data speak, and therefore no pre-existing theory is needed. In an ideal case the grounded theory analysis is purely indicative. In practice, there always exist little or more pre-existing knowledge and bias related to the research subject. To be exact, a target to develop something is already a strong bias. Who defines development? The development of one stakeholder group may be stagnating for another group. When discussing values and biases, the best we can do as researchers is to be as open as possible about the motives we recognize in ourselves. In this study, the researchers had a strong vision of how ICT Bachelor education should be organized. However, the interviewees were asked open-ended questions about the subject, and the results are presented as they are with no value laden interpretations added. Open is coding and axial coding phases mostly went on in parallel. The selective coding phase of this study started also quite early and parallel with the axial coding phase. The saturation of the data [106] also took place quite early, after 8 saw the future of the ICT Bachelor education. By analyzing the data two seed categories emerged [17] during the open coding phase: 1) Creating interdisciplinary interaction during ICT education 2) Entrepreneurial mindset and its value. Based on analysis of these seed categories and combined with the analysis of the new field notes (including memos, emails, book essays, and observation data) between January 2017 and mid Of September 2017 a pattern of “where should we be heading?” was written.

B. Observations based on the Interview data

Altogether 13 persons representing all parties in the system were interviewed in 12 interviews in September for the study. The interviews lasted from 20 minutes to 45 minutes. In general, the majority of the interviewees shared the opinion the model of modern education is a response to many challenges in employment of newly graduated and at the same time it is a way to pave the way to settling to the working career smoothly after studies. The student’s early adoption of an open view over the real business life was also generally seen as a positive and novel way in educating experts in the business world, where exactly the described individual capabilities are appreciated by employees. Entrepreneur’s mindset and thinking as a driving force for students was seen as a positive feature to be maintained in the education. Need of establishing a cooperative and working as team entrepreneurs was seen differently between the interviewees. Some of the interviewees did

not see that learning to run an enterprise would bring much value to ICT students. The interviewees from industry, however, saw that learning to think and operate as entrepreneurs would be one of the most important things to learn overall. As the most promising pathways, the interviewees saw possibilities of interdisciplinary interaction between marketing and ICT students who all are familiarized with the ICT business and the ICT customers' businesses. During the studies the two student groups could make use of each other's specialty area by participating in shared projects either in RDI or infirm collaboration projects. As the research is aimed at understanding the future needs for a competent ICT education, several ICT company representatives were interviewed. As one way to ensure competent future employees in ICT field, the interviewed ICT companies saw possibilities for participating directly to the education of ICT students via both direct education activities and placement opportunities or shared customer projects in RDI projects. This would create a firm an efficient recruitment process with less needs of training the newly recruited personnel. The interviewees that have graduated from the team entrepreneurship ecosystem or are currently studying marketing in that environment had positive experiences of this type of education system. The most important and positive part mentioned was learning through real business cases. The most valuable part seen in the model was the early networking in the business. After graduation, it has been easy to find a work in the field of studies. At least the different form of studies in a cooperative has worked as a positively differentiating factor for the job applications.

ICT business is mostly project-based business where experience and entrepreneurial mindset is a benefit as such. The current marketing team entrepreneurs have also started to build cooperation with students of different sectors Educations within SUAS to be able to expand their domain knowledge. Making oneself familiar with different contexts where marketing (and ICT) are used are another example of positively differentiating factor for the job applicant. The ICT education ecosystem and ICT education in general needs to respond to the changing skill requirements in the industry. In the ecosystem that can be strengthened by involving the ICT sector in the constant development of the study programme and in the education activities needed in a special kind of projects.

5. Summary and discussion

Overall, the current PROPOSED MODEL [1] seems to provide a solid basement above which the upcoming ICT education could be organised. The interviewees emphasised that the proposed model offers solutions to organise modern education and will mitigate the challenges concerning recruitment. The beneficiary aspects of deploying the ICT education mentioned several times in the interviews were as follows:

Development of entrepreneurial mindset of ICT students.

Close Cooperation with local ICT companies in development projects from the very beginning of the studies.

- 1) Common customer projects between ICT students and marketing team entrepreneurs.
- 2) Working in blended teams with people with different background, know-how, and skills
- 3) Team coaching for teams to guarantee understanding of different team roles and other team development

6. Conclusion

This is to say that the use of the proposed model i.e social media and collaborative learning process can effectively solve the problems of ICT intelligent systems of education management. This article justifies the use of social media and collaborative learning process and in the context of the problem of assessing the quality of Education.

7. Future Research paths

The authors are interested in creating more understanding of learning and education models that produce most competent and skilled future experts with both ICT and business understanding, and who are ready to quickly jump into the wheel of global competition, thus finding their own motivation and interests of business for the best of the local service sector.

One probable future path is conducting a study where the situation of the current proposed model is compared to other ecosystems where Bachelor level ICT education is deployed as team entrepreneur basis. In addition, the upcoming pilot project will offer possibilities to interview and observe ICT student in their real learning environment.

There is also lots of work left to better integrate the competencies of school staff into the coaching process of marketing team entrepreneurs and / or ICT students, whether they study as team entrepreneurs or conventional students. This will require more adaptive attitude of how learning is organized from all the parties involved: teachers, administration, and team entrepreneurs.

The third objective is to explore and start developing a platform business model to create and support the stakeholders involved in the development of the proposed model. The platform will offer changeable value units for all the current stakeholder groups of the proposed model and also attract new customer organizations to join into cooperation. After piloting this platform in the local proposed model it can be easily scaled up to international level via other "locals" where education is organized in modern ways.

References

- [1] Nityashree Nadir, Dr. R. Kamatchi(2017), "The Hybrid Model For Increasing the Performance of ICT Education", *Journal of Advanced Research in Dynamics and Control Systems*, Vol.9, Sp-12/2017, pp.2281-2292.
- [2] R.B.Kozma (2011), "ICT, Education Transformation, and Economic Development: An Analysis of the US National Educational Technology Plan. E-: Learning and Digital Media", Vol.8, No.2, pp 106-120. <https://doi.org/10.2304/elea.2011.8.2.106>.
- [3] D. Stoilescu (2005, June), *Using computers and software in the classroom. In Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 2556-2561).
- [4] D. Stoilescu (2009), *Multimedia CSCL tools and methods from a knowledge building perspective. Acta Didactica Napocensia*, Vol. 2, no.1 pp. 127-136.
- [5] J. Ainley, D. Banks, & M. Fleming, "The influence of IT: perspectives from five Australian schools". *Journal of Computer Assisted Learning*. Vol. 18, no.4 pp. 395-404. <https://doi.org/10.1046/j.0266-4909.2002.00251.x>.
- [6] Australian Computer Society [ACS]. (2015), *Australia's digital pulse: Key challenges for our nation – digital skills, jobs and education. Sydney, Australia: Deloitte Access Economics*.
- [7] T. M. Tran & D. Stoilescu (2016), *an analysis of the content, policies and assessment of ICT curricula in the final years of secondary schooling in Australia and Vietnam: A comparative educational study. Journal of Information Technology Education: Research*, Vol.14, pp. 49-73. Retrieved <http://www.jite.org/documents/Vol15/JITEv15ResearchP049-073Tran2111.pdf>.
- [8] *Board of Studies New South Wales (2003) Information and Software Technology Years 7–10. Curriculum from Year 7 to Year 10*.
- [9] *Australian Curriculum (2017). Information and Communication Technology (ICT) Capability. Retrieved from http://www.australiancurriculum.edu.au/generalcapabilities/informationand-communication-technology-capability/introduction/key-ideas*.
- [10] G. A. Bowen (2009). *Document analysis as a qualitative research method. Qualitative research journal*, vol. 9. No. 2, pp. 27-40. <https://doi.org/10.3316/QRJ0902027>.
- [11] P. A. Atkinson. & A. Coffey (2004). *Analysing documentary realities. In D. Silverman (Ed.), Qualitative research: Theory, method and practice (2nd ed.)*, London: Sage, pp. 56–75.
- [12] A. Labuschagne (2003). *Qualitative research: Airy-fairy or fundamental? The Qualitative Report* vol. 8. No. 1. Retrieved 5 January 2017, from <http://www.nova.edu/ssss/QR/QR8-1/labuschagne.html> 334.