PARAMETER BASED RANKING OF ICT TOOLS USED IN EDUCATION

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Abstract:

The role that communication and interaction plays in the teaching-learning process is a critical success factor in educational paradigms. E-learning can contribute to the quality of education. E-learning offers opportunities for the optimizing interaction and communication between lecturers and learners. ICT tools are an important medium for such interaction and communication.

ICT tools have world wide acceptance. These tools are having its potential for increasing productivity by making learning available anywhere and anytime. These tools allow learners to participate in educational activities without the restrictions of time and place. ICT tools have the power to make learning more widely available and accessible than we are used to in traditional learning environments.

The technology, industry & the educational system have strong linkage & close association. The 21st century educational system aims to develop competency among students by providing functional based education through extensive usage of digital technology & thus provides efficient human resources required by the corporate to sustain in today's competitive global environment.

This paper attempts to find an answer weather ICT tools employed in B-school educational system are effective to develop competent human resources for the corporate (applications) & that too according to the fast changing global requirements.

This paper also focuses on various parameters to measure capacity of ICT tools. The authors have selected 5 ICT tools based on various categories. The survey of students done to observe effect of various parameters on the capacity of ICT tools. The matrix has been plotted based on those values. The capacity of tools is calculated by using weighted average method. Selected tools have given ranking based on their calculated capacity.

Keywords: ICT tools, competency, capacity, parameters, matrix.

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- **Introduction:**

The education is a socially oriented activity. It plays vital role in building the society. The quality education traditionally is associated with strong teachers having high degrees. Using ICTs in education it moved to more student –centered learning. Education determines standard of society. The quality education helps to empowering the nation in all aspects by providing new thoughts, the ways of implementation of various technologies and so many such things.

As world is moving rapidly towards digital information, the role of ICTs in an education becoming more and more important and this importance will continue to grow and develop in 21st century. ICT has begun to have a presence but unfortunately we are lacking to achieve its desired impact.

The functional based education is the need of the society. B-school education is one of them. B-schools are trying to develop interface with the corporate section. The aim of this interface is to provide human recourses to the corporate in the form of fresher students. B-schools have adopted number of effective teaching & learning methodologies. Education must expand to meet rising skill needs. Technology is the most effective way to increase the student's knowledge, engagement and required skills. Educational systems need to be strong links with business and economy.

- **ICT and ICT tool:**

ICT is an acronym that stands for "Information Communication Technologies". Information and communication technologies are an umbrella term that includes all technologies for the manipulation and communication of information. ICT considers all the uses of digital technology that already exists to help individuals, business and organization.

A tool is a device or implement, especially one held in the hand, used to carry out a particular function. "A learning tool is a tool to create or deliver learning content/solutions for others, or a tool for your own personal or professional learning."

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- **Need of the ICT Tools:**

The quality education traditionally was associated with knowledgeable teachers having high degrees. Conventionally it was more teacher-centered. It is the need of the day to improve quality & structure of the syllabi by enforcing competency & performance based approach towards it. Use of ICT makes it possible to promote transformation of education from teacher-centered to students-centered institutes. The quality education now a day means knowledgeable teachers with required skill sets, practical approach towards the subject in addition to the theoretical knowledge, effective integration of technology in an education etc.

- **Parameters identification and weight Assignment:**

To identify parameters which are affecting the ICT tools was a challenging task. Authors have suggested fourteen such parameters based on opinions of various developers from IT industries, students and academicians who are actual end users. The expectations from the tools in various aspects like teaching, learning, student engagement, improvement in education, to keep a pace with globally changing demands are considered before finalizing these parameters. There 14 parameters have assigned variables from P1,P2,….P14.

Each parameter has assigned a weight. This weight assignment is based on the importance of the concern parameter in the working of the tool. There are 14 weights for all parameters. These weights have assigned variables from W1,W2,….W14. Following is the table showing identified parameters, and weights with their symbols.

Parameters affecting the ICT tools:

Parameter	symbol	Definition	Weight symbol	Weight
Accuracy	P1	Capacity to produce accurate results.	W1	5

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Response Time	P2	Time to get response to the user's query.	W2	4
Scalability	P3	Capacity to handle volume of task.	W3	2
Cost Effectiveness	P4	Comfort of user to the tools cost/ how much cost is suitable to the user.	W4	3
Functionality	P5	Capacity to provide various services/ functionalities.	W5	5
Student Engagement	P6	Capacity to engage students for learning .	W6	4
Productivity	P7	Quality of the output.	W7	4
Security	P8	Capacity to provide security to contents, tansactions, data.	W8	3
Content Reliability	P9	Capacity to provide reliabile contents. / rationality.	W9	3
User Satisfaction	P10	Capacity to satisfy the user.	W10	3
User friendlyness	P11	Capacity to provide user friendliness to the user.	W11	3
Time Consumption	P12	Capacity to save the user's time.	W12	2
Capacity to enhance learning	P13	Capacity to improve quality of learning.	W13	3
Applicability	P14	Capacity to apply to apply the tool to various perpuses or subjects.	W14	4

An authors have suggested some parameters which may help to measure working capacity of tool.

- **Research Methodology used**

- **Capacity of ICT tool**: Capacity is 'the amount that something can produce'. It is difficult to measure capacity of ICT tool but authors have suggested some parameters to calculate working capacity of ICT tool. These parameters are suggested based on the expectations of user from the tool.

    ICT tools are divided into 10 categories.

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1. Educational and training tools

2. Video, Audio and image tools

3. Communication tools

4. Networking and collaboaration tools

5. Web , blogging and Wiki tools

6. Book Marking and curation tools

7. Office Tools and Ancillaries

8. Productivity Tools

9. Browsers, readers ans dashboards

10. Mobile devices and synchronization tools

Out of above mentioned categories authors have selected five ICT tools. Selected tools are-

A] Educational & Learning Tools:

1. Articulate [Educational & Training Tools - Authoring tools] http://www.articulate.com

Articulate provides e-Learning authoring software, ie. Articulate Studio (which includes Presenter, Engage and Quizmaker) and Storyline.

2. Camtasia Studio [Educational & Training Tools : Authoring tools] www.techsmith.com/camtasia.html

Camtasia (from Techsmith) is a tool that will let you record your screen to create training, demo, and presentation videos, or screencasts.

3. Moodle [Educational & Training Tools : Learning Platform] www.moodle.org

 Moodle is a free, open source web application that educators can use to create course management systems.

B] Video, Audio, Image Tools

4. Adobe Edge Animate https://creative.adobe.com/products/animate

With Adobe Edge Animate you can create **animated and interactive content**. It is easy to use and interactivity features like animation control and looping are also available. It works well on IOS and Android, as well as on desktop browsers like Chrome, Safari, Firefox, and Internet Explorer 9.

C] Survey Tools

5. Survey Monkey [Survey Tool] www.surveymonkey.com

SurveyMonkey is the world's most popular online survey tool . It's easy to set up free surveys, polls, questionnaires, customer feedback and market research.

The survey is conducted for selected ICT tools. Following Matrix is plotted. Students have been aked to fill the matrix and data is collected.

	p1	p2	p3	p4	p5	p6	p7	p8	p9	p10	p11	p12	p13	p14
Articulate														
Camtasia Studio														
Moodle														
Survey Monkey														
Adebe Engine														

Matrix for data collection

For each tool its working capacity is calculated based on the weighted average formula.

Formula of Weighted Average:

Weighted Average= $\sum P_i W_i$ / sum of weights *no. of parameters

Where,

P = observation (actual value of parameter from the respondent)

W = weight of parameter

i = 1,2,3,…….,14

Weighted Average Calculation for or selected tools:

Atrticulate

	p1	w1	p2	w2	p3	w3	p4	w4	p5	w5	p6	w6	p7	w7	p8	w8	p9	w9	p10	w10	p11	w11	p12	w12	p13	w13	p14	w14	Weighted Average
Articulate 1	6	5	5	4	6	2	6	3	5	5	6	4	6	4	9	3	8	3	9	3	8	3	7	2	8	3	6	4	0.5
Articulate 2	6	5	6	4	8	2	7	3	7	5	9	4	9	4	9	3	8	3	9	3	8	3	7	2	8	3	8	4	0.6
Articulate 3	5	5	6	4	5	2	6	3	6	5	6	4	6	4	9	3	5	3	4	3	4	3	5	2	5	3	4	4	0.4
Articulate 4	6	5	7	4	4	2	6	3	6	5	5	4	6	4	9	3	5	3	4	3	5	3	4	2	5	3	6	4	0.4
Articulate 5	6	5	7	4	4	2	6	3	6	5	5	4	6	4	9	3	5	3	4	3	5	3	4	2	5	3	6	4	0.4
Articulate 6	9	5	6	4	9	2	8	3	9	5	8	4	8	4	8	3	7	3	7	3	6	3	7	2	9	3	9	4	0.6
Articulate 7	9	5	8	4	9	2	7	3	9	5	7	4	10	4	9	3	10	3	10	3	9	3	8	2	9	3	9	4	0.6
Articulate 8	9	5	8	4	9	2	7	3	9	5	7	4	10	4	9	3	10	3	9	3	9	3	8	2	9	3	9	4	0.6
Articulate 9	8.5	5	9	4	10	2	10	3	9	5	7	4	9	4	9	3	10	3	8	3	10	3	10	2	10	3	10	4	0.7
Articulate 10	6	5	5	4	6	2	6	3	6	5	5	4	7	4	8	3	6	3	6	3	4	3	6	2	7	3	7	4	0.4

| Average of the articulate | | 0.5 | 0.6 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 0.6 | 0.7 | 0.4 | 0.5 |

| Average of the articulate | 0.513 |

Camtasia Studio

	p1	w1	p2	w2	p3	w3	p4	w4	p5	w5	p6	w6	p7	w7	p8	w8	p9	w9	p10	w10	p11	w11	p12	w12	p13	w13	p14	w14	Weighted Average

	p1	w1	p2	w2	p3	w3	p4	w4	p5	w5	p6	w6	p7	w7	p8	w8	p9	w9	p10	w10	p11	w11	p12	w12	p13	w13	p14	w14	Weighted Average
Camtasia 1	8	5	8	4	8	2	9	3	9	5	9	4	8	4	9	3	8	3	9	3	8	3	7	2	8	3	6	4	0.583333333
Camtasia 2	9	5	8	4	8	2	9	3	9	5	9	4	8	4	7	3	8	3	9	3	9	3	9	2	10	3	9	4	0.619047619
Camtasia 3	9	5	9	4	8	2	9	3	8	5	9	4	8	4	6	3	7	3	9	3	10	3	9	2	10	3	9	4	0.613095238
Camtasia 4	9	5	8	4	8	2	9	3	9	5	9	4	8	4	7	3	8	3	9	3	9	3	9	2	10	3	9	4	0.619047619
Camtasia 5	9	5	9	4	8	2	9	3	8	5	9	4	8	4	9	3	5	3	4	3	5	3	9	2	10	3	9	4	0.572916667
Camtasia 6	8	5	7	4	7	2	9	3	8	5	9	4	6	4	8	3	7	3	7	3	6	3	8	2	9	3	7	4	0.541666667
Camtasia 7	9	5	7	4	8	2	9	3	8	5	9	4	10	4	9	3	10	3	10	3	9	3	8	2	9	3	9	4	0.632440476
Camtasia 8	9	5	7	4	8	2	9	3	8	5	8	4	10	4	9	3	10	3	9	3	9	3	8	2	9	3	9	4	0.62202381
Camtasia 9	10	5	8	4	9	2	9	3	10	5	10	4	7	4	9	3	10	3	8	3	10	3	10	2	10	3	10	4	0.663690476
Camtasia 10	7	5	8	4	8	2	7	3	6	5	8	4	7	4	8	3	6	3	6	3	4	3	6	2	7	3	7	4	0.486607143

Average of the Camtasia Studio	0.58	0.62.	0.61	0.62	0.41	0.57	0.54	0.63	0.62	0.66	0.49

Average of the Camtasia Studio	0.579

Moodle

	p1	w1	p2	w2	p3	w3	p4	w4	p5	w5	p6	w6	p7	w7	p8	w8	p9	w9	p10	w10	p11	w11	p12	w12	p13	w13	p14	w14	Weighted Average
moodle 1	7	5	6	4	9	2	7	3	6	5	9	4	7	4	8	3	6	3	7	3	10	3	9	2	5	3	7	4	0.514880952
moodle 2	7	5	6	4	9	2	6	3	10	5	9	4	9	4	8	3	8	3	9	3	7	3	6	2	7	3	8	4	0.5625
moodle 3	8	5	9	4	6	2	7	3	8	5	9	4	9	4	8	3	8	3	9	3	9	3	8	2	10	3	9	4	0.602678571
moodle 4	9	5	8	4	7	2	7	3	8	5	8	4	8	4	9	3	8	3	9	3	9	3	8	2	9	3	10	4	0.601190476
moodle 5	9	5	8	4	7	2	7	3	8	5	8	4	8	4	9	3	8	3	9	3	9	3	8	2	9	3	10	4	0.601190476
moodle 6	10	5	9	4	7	2	7	3	9	5	8	4	9	4	7	3	7	3	8	3	7	3	8	2	7	3	8	4	0.580357143
moodle 7	9	5	8	4	9	2	7	3	6	5	8	4	10	4	8	3	9	3	8	3	8	3	8	2	9	3	9	4	0.589285714
moodle 8	10	5	9	4	9	2	8	3	6	5	9	4	10	4	8	3	10	3	9	3	9	3	8	2	9	3	9	4	0.626488095
moodle 9	8	5	7	4	9	2	7	3	7	5	9	4	8	4	7	3	7	3	9	3	9	3	7	2	7	3	10	4	0.566964286
moodle 10	7	5	6	4	6	2	10	3	8	5	6	4	8	4	5	3	8	3	9	3	10	3	8	2	9	3	9	4	0.553571429

Average of the Moodle	0.5	0.6	0.6	0.6	1	0.6	0.6	0.6	0.7	0.6	1

Average of the Moodle	0.644

Adobe Edge Animate

p1	w1	p2	w2	p3	w3	p4	w4	p5	w5	p6	w6	p7	w7	p8	w8	p9	w9	p10	w10	p11	w11	p12	w12	p13	w13	p14	w14	Weighted

																													Average
Adobe	5	5	9	4	7	2	8	3	7	5	8	4	9	4	8	3	6	3	7	3	10	3	9	2	5	3	7	4	0.529761905
Adobe	7	5	9	4	6	2	8	3	8	5	9	4	4	4	8	3	8	3	9	3	7	3	6	2	7	3	8	4	0.535714286
Adobe	8	5	9	4	6	2	7	3	8	5	9	4	9	4	8	3	8	3	9	3	9	3	8	2	10	3	9	4	0.602678571
Adobe	8	5	7	4	8	2	7	3	9	5	7	4	9	4	9	3	8	3	9	3	9	3	8	2	9	3	10	4	0.598214286
Adobe	8	5	7	4	8	2	7	3	9	5	7	4	9	4	9	3	8	3	9	3	9	3	8	2	9	3	10	4	0.598214286
Adobe	9	5	7	4	8	2	8	3	10	5	10	4	10	4	7	3	7	3	8	3	7	3	8	2	7	3	8	4	0.59375
Adobe	10	5	9	4	7	2	8	3	8	5	7	4	10	4	8	3	9	3	8	3	8	3	8	2	9	3	9	4	0.610119048
Adobe	9	5	8	4	7	2	7	3	8	5	8	4	9	4	8	3	10	3	9	3	9	3	8	2	9	3	9	4	0.605654762
Adobe	8	5	7	4	9	2	7	3	7	5	9	4	8	4	7	3	7	3	9	3	9	3	7	2	7	3	10	4	0.566964286
Adobe	7	5	6	4	6	2	10	3	8	5	6	4	6	4	5	3	8	3	9	3	10	3	8	2	9	3	9	4	0.541666667

Average of Adobe Edge Animate		0.5	0.55	0.6	0.6	0.6	0.6	0.6	0.61	0.6	0.5

Average of Adobe Edge Animate		0.53

Survey Monkey

	p1	w1	p2	w2	p3	w3	p4	w4	p5	w5	p6	w6	p7	w7	p8	w8	p9	w9	p10	w10	p11	w11	p12	w12	p13	w13	p14	w14	We
Survey Monkey1	6	5	5	4	8	2	6	3	7	5	8	4	9	4	7	3	5	3	6	3	6	3	7	2	8	3	6	4	0.4
Survey Monkey2	8	5	7	4	8	2	6	3	7	5	10	4	8	4	9	3	7	3	8	3	9	3	8	2	6	3	7	4	0.5
Survey Monkey3	7	5	8	4	5	2	6	3	4	5	6	4	7	4	8	3	7	3	5	3	6	3	7	2	8	3	7	4	0.4
Survey Monkey4	8	5	7	4	6	2	6	3	5	5	7	4	6	4	7	3	8	3	6	3	6	3	7	2	7	3	6	4	0.4
Survey Monkey5	8	5	7	4	6	2	6	3	5	5	7	4	6	4	7	3	8	3	6	3	6	3	7	2	7	3	6	4	0.4
Survey Monkey6	8	5	6	4	9	2	9	3	9	5	7	4	9	4	8	3	9	3	8	3	9	3	7	2	9	3	10	4	0.5
Survey Monkey7	9	5	8	4	8	2	6	3	9	5	6	4	10	4	8	3	9	3	8	3	9	3	9	2	9	3	10	4	0.6
Survey Monkey8	8	5	7	4	8	2	6	3	9	5	7	4	10	4	9	3	9	3	9	3	10	3	9	2	9	3	8	4	0.5
Survey Monkey9	7	5	6	4	7	2	8	3	8	5	7	4	10	4	8	3	8	3	9	3	7	3	7	2	9	3	9	4	0.5
Survey Monkey10	9	5	8	4	8	2	10	3	9	5	7	4	8	4	6	3	8	3	7	3	9	3	10	2	9	3	8	4	0.5

Average of the Survey Monkey	0.5	0.6	0.5	0.5	0.47	0.6	0.61	0.6	0.6	0.6	

Average of the Survey Monkey	0.55

- **Summative Result of Weighted Average:**

Tool	Working Capacity
Articulate	0.51
Camtasia	0.58
Moodle	0.64
Adobe Edge Animate	0.53
Survey Monkey	0.55
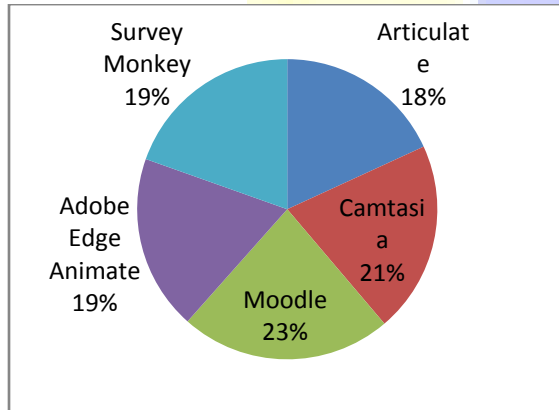
Pie Chart showing working capacity for selected tools

- **Conclusion:**

As per parameter based ranking Moodle stands 1st as it is having highest working capacity 0.64. As it is free open sourse tool users find it easy to use. Many institutes use Moodle for Course Management System. It is one of the popular ICT tools. Camatasia is having screen recording capacity and it is prooved very useful for presentations, demo traing etc. The Camtasia stands 2nd with 0.58 working capacity. Survey monkey secure 3rd position with 0.55 working capacity. SurveyMonkey is the world's most popular online survey tool . To set up free survey, questionnaire, polls and market research it is used. Adobe Edge Animate can create animated and interactive content. It is used for 4th is Adobe Edge Animate its working capacity is 0.53. Because of its animation based interactive feature many students love to use it. Articulate, with 0.51 working capacity stands 5th position which is very popular authoring tool.

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